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ANTHROPOLOGICAL COLLECTION.

LENT BY

COLONEL LANE FOX.

FOR THE ANTI-QUARIAN SOCIETY
OF THE COMMISSIONERS OF THE PUBLIC WORKS
AND THE ANTI-QUARIAN SOCIETY

REYNOLDS GREEN BRANCH, MUSEUM

CATALOGUE

ANTHROPOLOGICAL COLLECTION

REYNOLDS GREEN BRANCH, MUSEUM

IN THE

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LONDON

PRINTED BY GEORGE H. LLOYD AND WILLIAM P. STEVENS

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SCIENCE AND ART DEPARTMENT
OF THE COMMITTEE OF COUNCIL ON EDUCATION,
SOUTH KENSINGTON.

BETHNAL GREEN BRANCH MUSEUM.

CATALOGUE
OF THE
ANTHROPOLOGICAL COLLECTION

LENT BY COLONEL LANE FOX FOR EXHIBITION

IN THE
BETHNAL GREEN BRANCH OF THE SOUTH
KENSINGTON MUSEUM.

June 1874.

BY COLONEL LANE FOX.

With Illustrations.

Parts I. and II.



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* * Parts III. and IV. will be published hereafter, and will relate, the former to modes of navigation, representative arts of savage and early races, ornamentation, personal ornament, pottery and substitutes for pottery, tools, deities and religious emblems, clothing and weaving, fire-arms, and illustrations of the modes of hafting stone implements. Part IV. will be devoted to the prehistoric series, and will include natural forms, simulating artificial forms, illustrations of forgeries and modern fabrications, palæolithic implements, neolithic implements, bronze implements, and iron implements, with the stone implements of modern savages, adapted to the illustration of those of prehistoric times.

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* * The illustrations, which have been roughly sketched in outline, are sufficient to convey an idea of the objects referred to in the text ; but the relative proportions have not been preserved, nor are the details fully delineated.

The specimens selected for illustration are those which appeared best calculated to render the text intelligible, they are not, however, in sufficient number to show the sequence in all cases ; this can only be properly understood by reference to the objects themselves.

PREFACE TO PARTS I. AND II.

As the first two parts of this Catalogue are to be published before the remaining portion is completed, it appears desirable to say a few words explanatory of the system upon which the collection has been arranged, reserving a more comprehensive introduction until the whole is finished. Most of the objects exhibited are such as may be found in many ethnological museums, and it is only in relation to their psychological and sociological bearings that I venture to think some improvement may be found to have been introduced into the method of exhibiting them.

The objects are arranged in sequence with a view to show, in so far as the very limited extent of this collection renders such demonstration practicable, the successive ideas by which the minds of men in a primitive condition of culture have progressed in the development of their arts from the simple to the complex, and from the homogeneous to the heterogeneous.

Evolution and development are terms which, it is now beginning to be admitted, are as applicable to the progress of humanity as to all other mundane affairs. Anthropology, according to the more usual acceptance of the term, deals with the whole history of human development, and may be divided into two main branches. The first relates to the constitution of man, in which we have to do with man as a member of the animal kingdom, his mental and physical faculties and peculiarities, the varieties of race, the influence of heredity, and so forth. The second division may be classed under the head of culture, in which we deal with a new order of things, the origin of which was coeval with the first appearance of man upon the earth, no other animal being capable of self culture in the proper sense of the term. Up to this point the development of species has gone on in accordance with the laws of procreation and natural selection. Man being the last product of this order of things, becomes capable by means of his intellect of modifying external nature to his wants, and from henceforth we have to concern ourselves with a series of developments produced by art.

It is the province of anthropology to trace back the sequence of these developments to their sources. In the

more restricted sense of the term anthropology, it appears to be applied by some to the first only of these two divisions of the subject, whilst the second, or that which I here term culture, has been recognised under the appellation of sociology or social science. It matters little which term is employed, provided we keep the two ideas distinct in our minds.

All the specimens in this collection, with the exception of those referred to in Part I. of this Catalogue, relate to the second division of the subject, viz., human culture.

Human ideas, as represented by the various products of human industry, are capable of classification into genera, species, and varieties in the same manner as the products of the vegetable and animal kingdoms, and in their development from the homogeneous to the heterogeneous they obey the same laws. If, therefore, we can obtain a sufficient number of objects to represent the succession of ideas, it will be found that they are capable of being arranged in museums upon a similar plan.

The classification of natural history specimens has long been a recognised necessity in the arrangement of every museum which professes to impart useful information. But ethnological specimens have not generally been thought capable of anything more than a geographical classification. This arises mainly from sociology not having until recently been recognised as a science, if, indeed, it can be said to be generally accepted as such at the present time. Travellers, as a rule, have not yet embraced the idea, and consequently the specimens in our museums, not having been systematically collected, cannot be scientifically arranged. They consist of miscellaneous objects brought home as reminiscences of travel or of such as have been most easily procured by sailors at the sea-ports. Unlike natural history specimens which have for years past been selected with a view to variety, affinity, and sequence, these ethnological *curiosities* have been selected without any regard to their history or psychology, and although they would be none the less valuable for having been selected without influence from the bias of preconceived theories, yet, not being supposed capable of any scientific interpretation, they have not been obtained in sufficient number or variety to make classification possible.

Since 1852 I have endeavoured to overcome this difficulty by selecting from amongst the commoner class of objects which have been brought to this country those which appeared to show connexion in form. Whenever missing

links have been found they have been added to the collection, and the result has been to establish, however imperfectly, sequence in several series.

I had already accumulated a considerable number of objects upon this plan when I first became acquainted with the more extensive and valuable collection of Mr. Henry Christy, which, however, at that time was confined chiefly to pre-historic specimens, in which field of research he had himself contributed important discoveries; since then, and subsequently to his death, his collection has extended to objects illustrating the industry of modern savages.

The utility of two collections embracing the same class of objects might not be very apparent were it not for the different method upon which the specimens have been collected and arranged. In the Christy Collection the primary arrangement is geographical, whereas I have from the first collected and arranged by form. The result has been that different points of interest have been brought to light. Both systems have their advantages and disadvantages, by a geographical arrangement the general culture of each distinct race is made the prominent feature of the collection, and it is therefore more strictly ethnological, whereas in the arrangement which I have adopted the development of specific ideas, and their transmission from one people to another, is made more apparent, and it is therefore of greater sociological interest.

Acting upon the principle of reasoning from the known to the unknown I have commenced this catalogue with the specimens of the arts of existing savages, and have employed them as far as possible to illustrate the relics of primeval men, none of which, except those constructed of the more imperishable materials, such as flint and stone, have survived to our time. All the implements of primeval man that were of decomposable materials having disappeared, can be replaced only in imagination by studying those of his nearest congener, the modern savage.

To what extent the modern savage actually represents primeval man is one of those problems which anthropology is called upon to solve. That he does not truly represent him in all particulars we may be certain. Analogy would lead us to believe that he presents us with a traditional portrait of him rather than a photograph. The resemblance between the arts of modern savages and those of primeval men may be compared to that existing between recent and extinct species of animals. As we find amongst

existing animals and plants species akin to what geology teaches us were primitive species, and as among existing species we find the representatives of successive stages of geological species, so amongst the arts of existing savages we find forms which, being adapted to a low condition of culture, have survived from the earliest times, and also the representatives of many successive stages through which development has taken place in times past. As amongst existing animals and plants these survivals from different ages give us an outline picture of a succession of gradually improving species, but do not represent the true sequence by which improvement has been effected, so amongst the arts of existing people in all stages of civilisation we are able to trace a succession of ideas from the simple to the complex, but not the true order of development by which those more complex arrangements have been brought about. As amongst existing species of animals innumerable links are wanting to complete the continuity of structure, so amongst the arts of existing peoples there are great gaps which can only be filled by pre-historic arts. What the palaeontologist does for zoology, the pre-historian does for anthropology. What the study of zoology does towards explaining the structures of extinct species, the study of existing savages does towards enabling us to realise the condition of primeval man.

This analogy holds good in the main, though there are points of difference which greatly complicate the human problem, and which cannot be entered into in this brief summary of the subject.

The importance of studying the material arts of savages and pre-historic men is evident, when it is considered that they afford us the most reliable evidence by which to trace their history and affinities. It has been said that language is the surest test of race. This is true of an advanced state of culture, in which language has attained persistency, and still more so where it has been committed to writing; but it is certainly not true of the lowest savages, amongst whom language changes so rapidly that even neighbouring tribes are unable to understand one another; and if this is the case in respect to language, still more strongly does it apply to all ideas that are communicated by word of mouth. In endeavouring to trace back the history of the arts to their root forms we find that in proportion as the value of language and of the ideas conveyed by language diminishes, that of ideas embodied in material forms increases in stability and permanence. Whilst in the earliest phases of humanity the names for things change with every genera-

tion, if not more frequently, the things themselves are handed down unchanged from father to son and from tribe to tribe, and many of them have continued to our own time faithful records of the condition of the people by whom they were fabricated.

In concluding this preface I cannot do better than refer the reader to the recently published work of Mr. Herbert Spencer on the study of sociology, and more particularly to that portion of it which relates to the difficulties of social science arising from the automorphic interpretation of the works of people in a very different state of culture to our own. To this cause must be attributed chiefly the difficulty which we experience in realising the very slow stages by which progress has been effected during the earliest periods of the human race.

A. LANE FOX.

Guildford,
May 1874.

NOTE.

The Collection to which this Catalogue relates occupies the whole of the South Basement of the Museum buildings. The series commences at the East End with the typical human skulls and hair of different races, and then proceeds with specimens of the culture of modern savages and barbarous races; these are arranged along the line of Screens and Walls on the South Side from East to West, and along the North Wall and in upright glass cases from West to East. After these the pre-historic series commences on the West, and runs along the line of desk cases from West to East.

Where necessary, arrows are painted on the Screens, indicating the sequence in which the objects thereon have been arranged.

CATALOGUE

OF

ANTHROPOLOGICAL COLLECTION.

LENT BY COLONEL LANE FOX.

PART I.

CASE 1.

EAST WALL.

TYPICAL HUMAN SKULLS AND HAIR OF DIFFERENT RACES.

Physical Anthropology being only cursorily treated in this collection, it has not been attempted to form a complete series of skulls. The best collection of skulls may be seen at the College of Surgeons, in Lincoln's Inn Fields, and in the collection of the Anthropological Institute, St. Martin's Place.

The following are examples of typical skulls of some of the principal races. It must, however, be understood that they only represent specimens of average forms. In nearly every race there are many varieties from the Dolichocephalic or long-headed to the Brachycephalic or short round-headed skull. Races have, however, for the most part characteristic forms, more especially aboriginal races in which the form of the skull is generally more uniform than that of more advanced races, which being the result of many crosses varies between greater extremes. Thus for example, the negro of Africa, the Papuan of New Guinea and the Melanesian Isles, the Australian, and most of the black races are dolichocephalic or long-headed people (see Professor Huxley's map of the principal varieties of mankind), whilst the Mongols of Northern Asia are examples of the opposite extreme of Brachycephalic or short skulls. European nations vary more than these, but still

retain characteristic differences; thus the Germans are, as a rule, a rounded-headed people, whilst the French and English, more particularly the latter are dolichocephalic. Cephalic index. The cephalic index represents the form of skull in figures, being the proportion of the greatest breadth to greatest length in any individual specimen: the greatest length being taken at 100 the index represents the breadth of the widest part in proportion to this length. All skulls in which the index is over 80, are regarded as Brachycephalic or short-headed, whilst those which are under 80 are dolichocephalic or long-headed.

As regards the psychological peculiarities appertaining to the various forms of skulls, that question must be considered for the present in abeyance awaiting further research. The arbitrary rules of the phrenologists have not been confirmed, owing to the uncertain knowledge we possess of the internal organism of the brain, and whilst on the other hand it is admitted that, all other things being equal, size represents mental power, it is upon the whole the tendency of modern investigation to attach less value to the form of the skull as an absolute indication of racial and mental character than was formerly supposed.

1. SKULL of HUMAN FŒTUS.
2. CAST of a NEGRITIC SKULL. New Guinea. Cephalic index, 63. Example of an extremely dolichocephalic or long form of skull.
3. CAST of a TARTAR SKULL. Cephalic index, 99. Example of an extremely Brachycephalic or short form of skull.
4. CAST of NEANDERTHAL (ELBERFELD) SKULL. Found in a grotto in the valley of the Dussel near Elberfeld, Germany, in association with the bones of mammoth and cave bear. Extreme length, 8 inches: extreme breadth, 5.75.
5. CAST of ENGIS SKULL. Found in a cavern near Liège with the remains of elephant, rhinoceros, bear, hyena, &c. Index, 68.1.
6. SKULL. Typical Australian. Cephalic index, 69. The Australian skulls are remarkable for the prominence of the supraciliary ridges.
7. SKULL. Australian. Cephalic index, 69.
8. SKULL. Ethiopian. Index, 75. The negro skulls are remarkable for their prognathism or prominence of the jaws.
9. SKULL. Ethiopian. Index, 71.

10. SKULL. North American Indian chief. Index, 77.
The square chin, prominent cheek bones, and marked features of the American Indian race are exemplified in this skull.
11. SKULL. Californian Indian. From the cemetery of the church of the old mission of San Carlos near Monterey. Index, 81.
12. SKULL. Patagonian Indian. South America. Index, 79.
An extremely thick massive skull, the prominent cheek bones and broad face of the Patagonian race is insufficiently represented in this specimen.
13. SKULL. New Zealander. Index, 72. An approach to the Australian type is observable in this skull.
14. SKULL. Chinese. Index, 82.
15. SKULL. Romano-British. Found by Col. A. Lane Fox with Roman remains 20 feet beneath the surface, in digging the foundations of a house in London Wall in 1866. Index, 70. A good typical specimen of the dolichocephalic British or Romano-British form.
16. SKULL. Anglo-Saxon. From the Saxon crypt at Thorpe Mallow, Northampton, 1840. Index, 78. A good example of the Brachycephalic Anglo-Saxon skull.
17. SKULL. Found by Col. A. Lane Fox in contact with a bronze socket knife or dagger (in this Collection) in a grave at Highdown Hill, Sussex, Oct. 12, 1867. Index, 70. Its connexion with the remains of the Bronze age is doubtful, and from its form improbable.
18. SKULL. Irish, of an extremely elongated form. Index, 65. Found several feet beneath the present burial ground of Cork Cathedral in digging the foundation of the new church, the elongation may be partly due to deformation subsequent to interment, the skull being extremely soft when found.
19. SKULL. Modern Irish, from Kilcrea Abbey, co. Cork, 1864. Index, 75. Probably adult female, and of a low order of intellect: the individual was living probably not more than a century ago.
20. SKULL. Probably that of a young female from Twyn-Capel, Holyhead Island. This skull is probably of the date of the chapel which surmounted the tumulus.
21. SKULL. Modern English. Index, 73.
22. SKULL. Modern English. Index, 78.

Deformations.

The following specimens represent deformations produced by compression early in life. The practice of distorting skulls prevails at the present time amongst the flat-head tribes of the north-west coast of North America, and was formerly practised in Peru, where two types are found in ancient graves, one represented by No. 25 produced by compression by means of a board on the forehead; and the other represented by No. 26 produced by ligatures causing an elongation of the skull. The practice of deforming skulls has been also found to prevail amongst the Avares, a tribe of Mongol descent, allied to the Ugrians and Huns, and in the Caucasus near Tifless, a skull of this form has been discovered, thus leading to the supposition that it may be a custom of Mongol origin, and may be ultimately found to prevail in other parts of the region inhabited by that race.

It is found that these deformations produce no alteration of intellectual capacity; they are supposed to add to the beauty of the individual, and are considered by some to be an imitation of their aboriginal progenitors.

23. SKULL of Qua-Qua, from Fort Rupert, Vancouver Island, north-west coast of America, procured in 1868. Artificially compressed and elongated.
24. SKULL. Vancouver Island. Artificially elongated; cubic capacity, 18·5.
25. SKULL. Peruvian. Artificially compressed by means of a board on the forehead; cubic capacity, 86·75.
26. SKULL. Peruvian, from Titicaca. A very remarkable specimen of an artificially elongated skull, the marks of the ligatures may be seen on the forehead; cubic capacity, 73·25.
27. CAST of HEAD. Cross, Lap and Swede.
28. CAST of HEAD. Cross, Lap and Fin, from Russian Finland.
29. HEAD of a CAPTURED CHIEF, artificially shrunk by the Xebaroe Indians of South America.

After the head has been boiled for some time with an infusion of herbs, the skull and bones are removed through the neck, the hair and features being preserved. Heated stones are then put into the hollow, and as they cool are constantly replaced by others; by this means the head is reduced to its present size; it is then suspended in the hut and solemnly abused by the owner, after which the mouth is sewn up to prevent the chance of a reply; the abuse is repeated at feasts and on special occasions.

The practice of preserving the heads of enemies prevails amongst many tribes of South America, the New Zealanders, and Dyaks of Borneo; the preserved scalps of the North American Indians are probably a vestige of this custom.

30. HEAD of Sloth, similarly treated by the Xebaroe Indians. Obtained by Mr. Buckley.
 31. SPECIMENS of AFRICAN NEGRO HAIR from various localities.
 32. SPECIMENS of TAGS of HAIR of the Papuans of New Guinea. The hair grows in tufts on the head like the tufts of hair in a shoe brush, these are allowed to grow and are bound round to form tags.
 33. SPECIMENS of HAIR showing intermediate gradations between the tufts of the Papuans of the south coast of New Guinea, and the lank hair of the Australians of Coburg peninsula, North Australia. The specimen of red hair from the island of Timor is probably artificially produced by lime.
 34. HAIR of the New Caledonians. (Papuan.)
 35. HAIR of the New Zealanders.
 36. HAIR of the natives of the west coast of South America.
 37. HAIR of the Indians of the north-west coast of North America.
 38. HAIR. Malay.
 39. HAIR of mummy from Palmyra. The light coloured tint has been artificially produced. Obtained by Capt. Burton.
 40. SPECIMEN of HAIR of a single English family. Showing great varieties of colour, and the changes at different ages.
 41. SKELETON of a monkey's foot.
 42. SKELETON of a human foot.
 43. HAND of a chimpanzee.
-

PART II.

WEAPONS.

SCREEN 2.

EAST WALL.

DEFENSIVE ARMOUR. SHIELDS.

No shield used.

Although the shield is now regarded as a barbarous weapon, long since laid aside by all civilized nations, we have evidence, in many savage races of a condition of culture, in which, even this simple contrivance for the defence of the body, had not been thought of. Amongst the Tahitans and Sandwich Islanders no shield was used, and one of the chief exercises in preparation for war consisted in practising to ward off the missiles of the assailant with spears and clubs. Capt. Wilkes, of the United States' exploring expedition says, that the inhabitants of Drummond's Island, one of the King's Mill group, use a coaco-nut stick or club, pointed at both ends, for warding off spears. Turner, in his missionary voyage, speaks of the inhabitants of Samoa practising in this manner, by allowing spears to be thrown at them and parrying them with their clubs. Kolben also speaks of the great dexterity of the Hottentots in warding off stones with their kirri-sticks. The Dinka tribe, of East Central Africa, use a club in the left hand to ward off the enemy's lances. The Shuwa and the Bagirmi of Central Africa, have no shields, the latter using a foreign name for it, and Gen. Campbell says, that the Khonds, hill tribes of the Orissa country, Central India, have never adopted the shield, which is so commonly used by the more recent immigrants into that country.

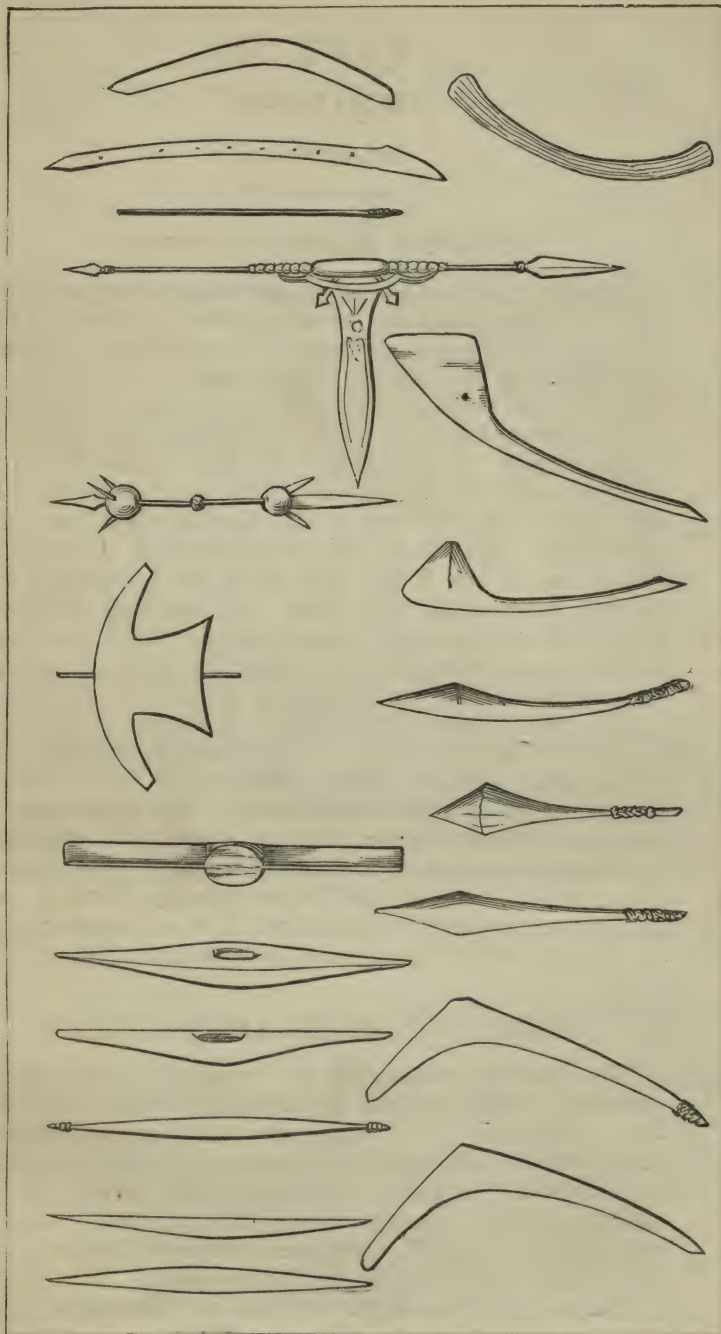
Clubs used as shields.

PARRYING STICKS AND SHIELDS.

Development of form.

The following specimens are arranged to illustrate the principle of the gradual development of the shield from the simple club or parrying stick, the gradual widening of the stick or club held in the centre, with the addition of a contrivance to cover the hand, until at last the long narrow shield is produced, and this ultimately develops into the broad shield, constructed to cover the body from the missiles and thrusts of the assailant. This gradual development of the shield is thus traced in three regions, viz., Australia, Central India, and Africa, and corresponds

1A. 1B. 2 3 4 5 6 7 8 9 10



11 12 13 14 15 16 17 18

PLATE I.



to the supposed original distribution of the Australioid race, as traced by Professor Huxley, in his map of the principal modifications of mankind. (See (Blue 5) in map on wall.)

SCREEN 2.

EAST WALL.

AUSTRALIAN HEILEMAN OR SHIELD.

44. Simplest form of parrying shield, *Tamarang*, ornamented with mother-o'-pearl discs, having an aperture for the hand in rear. Probably North Australia. Tamarang.

These are used to parry the darts of the assailant by casting them off with a twist of the hand. Major Mitchel speaks of the dexterity with which they make use of this weapon, and Mr. Oldfield describes the mode of cutting out these shields from the centre of a tree by means of a flint tool. A still simpler form to this, being a simple stick without a handle, thick in the middle and tapering towards both ends, flat at the back and round in front, is in the Salisbury Museum, and was presented by M. H. Marsh, Esq., M.P.; Fig. 1 A. is a rough sketch of this implement, taken with the permission of the curator, Mr. E. J. Stevens; another is in the Exeter Museum, of the same length, half-inch thick in the centre, and with elongated knobs at the ends. Fig. 1 B. is a rough sketch of this, but it has no pretension to accuracy of detail.

- 44A. A small Australian TAMARANG; probably used by children.
45. to 48. TAMARANGS. Australia. Showing a gradual increase in breadth.
49. to 51. SHIELD of the form called *Murukanye*, showing a further increase in breadth. Murukanye.
- 52 to 55. HEILEMANS. Western Australia. Showing a still further increase in breadth.
- 56 to 58. SHIELDS of the form called *Mulabakka*, showing a further increase in breadth, with projecting ends for parrying. Mulabakka.

Compare these ends with the stick of the Caffir shield, No. 65, used for the same purpose. These Australian shields are, in some places, called *Wadna*, and some idea of the slight value which aboriginal names afford as conveying a correct idea of the thing named may be formed from the circumstance that on seeing for the first time an English boat, they called it *Wadna*, from its resemblance to their shields. In Victoria this kind of shield goes by the name of *Turnmung*, the great divergence in the names as contrasted with the resemblance in form, will be noticed.

59. MULABAKKA, made of the bark of a tree, showing a further increase in breadth, without projecting ends.
60. Oblong Australian SHIELD, made of tree bark.

PARRYING STICKS AND SHIELDS, AFRICA.

61. Bow-shaped, parrying shield, DINKA, East Central Africa. It is held in the centre and the darts of the assailants parried with the hooked ends.
62. Fac-simile of PARRYING SHIELD from East Africa, in the United Service Museum. Probably Kaffir. Copied by permission.
63. Fac-simile of the SHIELD used by the Mundo negroes and the negroes of Ouady, Central Africa; at the back is a groove for the shaft of the spear, which is grasped by the hand whilst holding the shield. Fig. 2.
Compare this with the form of the Australian Tamarang, No. 47. Fig. 3.
64. Fac-simile of a wooden PARRYING SHIELD found in an ancient Egyptian tomb, in the Museum of the Louvre at Paris, from accurate measurements taken by Col. Fox. Fig. 4. Copied by permission of the authorities.
65. KAFFIR SHIELD of hide, with parrying stick at back. East Africa.

Compare this form with that of No. 56 from Australia. In each case the projection at the end serves to catch the darts of the assailant and turn them aside by a twist of the hand. A similar stick also projecting beyond the ends is used at the back of the leather shield of the negroes of Soudan, and Speke represents a similar projection at the ends of the long narrow shields of the Kidi men on a visit to King Kamrasi (page 567 of his work). A shield of similar form of crocodile's skin with a projecting stick from the White Nile is in the Christy Collection, and another of giraffe's skin, shaped like an inverted Norman arch, but with a similar stick from Kordofan is in the same collection. On the sides of the Kaffir shield there is sometimes a slight indentation, the object of which is doubtful, and is probably retained through fashion; it extends throughout many parts of Africa and is of different sizes. A similar notch is seen in the Nubian shield, No. 95.

66. OBLONG SHIELD of Elephant's hide. Fan negroes, Gaboon, West Africa.
67. SHIELD of Elephant's hide, with wings on the upper end. Fan negroes, Gaboon, West Africa.

The wings on this shield resemble those of the cowhide shields of the Bassutos of South-east Africa (Fig. 5.), the two forms are sufficiently close to denote connexion. It is not known whether this form of shield prevails in the district intermediate between the Gaboon and the country of the Bassutos. This form of shield must have somewhat resembled the Greek *πτελή*, described by Zenophon as being of the form of an ivy leaf, and which was borrowed from the Amazons.

68. OVAL WICKER SHIELD of the Neam Nam negroes.
Central Africa.

" Made of reeds or the leaf of the palm tree, interwoven in patterns of black and white. It is held by the handle in rear of the centre " when giving battle, the Neam Nam has two or three of the iron " boomerangs (Nos. 183 to 185), suspended by a leather button to the " inside of the shield lying directly over the handle of it; the whole of " which and a couple of lances he grasps in the left hand, whilst with " a lance in the right hand he assails the enemy. The shield, made of " so light a substance, will not repel a lance, but when struck by one, " the combatant giving a slight movement either to the right or left, " counteracts the penetration of the lance, which becoming entan- " gled and suspended in the shield, furnishes him with his enemy's " weapon in lieu of his own, which he is supposed to have cast." Obtained by Consul Petherick. See Royal United Service Journal, vol. iv. p. 176.

PARRYING SHIELDS OF DOUBLE ANTELOPES'
HORNS, INDIA.

69. PARRYING SHIELD of double antelopes' horns called
Madu or *Maru*. India. These are held in the centre
and used for parrying by turning off the darts of the
assailant in the same manner as the parrying shields of
Australia and Africa.

This weapon is generally carried by the Fakirs, Jogis, and other religious mendicants, Mussulman and Hindu. It is also found amongst the Bhils. For information respecting this weapon the writer is indebted to Sir Walter Elliot, K.C.S.I. This weapon is here in its simplest form.

70. PARRYING SHIELD, similar to No. 69, with the addition
of iron points which enable the weapon to be used for
thrusting as well.

71. PARRYING SHIELD, similar to Nos. 69 and 70 with the
addition of a small shield or hand guard. Another variety of this weapon has a straight broad blade springing from the handle in the centre at right angles to the parrying horns. The whole weapon is sometimes made of steel.

72. POINTED INSTRUMENT of antelope's horn. India. Probably a dervish's or fakir's crutch.

In Meyrick's *Ancient Armour*, vol. ii. pl. cxlvi. figs. 8 and 9, there is an illustration of a Japanese weapon evidently used in the same manner for parrying (Fig. 6), and in Boutell's *Arms and Armour*, fig. 61, page 269, there is an engraving of a parrying weapon, with a blade at right angles to the handle, described as a Moorish *adargue*, 15th century, which, if correct, proves by its form its oriental origin. Fig. 7.

LONG NARROW SHIELDS FROM THE ASIATIC ISLES.

The use of the long, narrow shield extends over the greater part of the Asiatic isles lying between Australia and the continent of Asia, and is used in a similar manner to those already described. There are innumerable varieties, showing various degrees of expansion, many of which may be seen in the Christy Collection, in Victoria Street. All show traces of development from a parrying stick similar to that of the Australians.

73. PARRYING SHIELD, Molucca Islands, with mother-o'-pearl studs, held by the hand in rear, like the preceding examples.
74. PARRYING SHIELD, inlaid with shells. Molucca Islands.
75. PARRYING SHIELD, inlaid with shells. Molucca Islands.
76. PARRYING SHIELD, somewhat longer than the preceding specimens, Molucca Islands, covered with sheet brass, in which the shell studs of the previous specimens are imitated in relief.
77. SHIELD of the Dyaks of Borneo, called "*Utap*," ornamented with a human figure, painted.
78. SHIELD of the Dyaks of Borneo, called "*Utap*," ornamented with human hair.
79. NARROW WICKER SHIELD, of Ysabel Island, one end being somewhat larger than the other.

The use of wicker work for shields was common in many countries, being a light and suitable material for the purpose. The Assyrians are represented using a small oblong shield, and also a larger one, apparently of wicker work. The shields used by the Homeric heroes were sometimes of osiers, twisted together, covered with ox-hides, and called *ireæ*; or of wood. (Smith, Dict. of Greek and Roman Antiquities.) The Musgu of Central Africa carry a wicker shield. The negroes of the Gold Coast, according to Bosman, carried a wicker shield. The Marghi are spoken of by Barth as carrying a large shield of reeds, called *Chaggo* by the Marghi, and *Kutufani* by the Kanuri, big enough for the protection of two or three persons. The Tartars, at the attack of Kief, in 1239, carried bucklers of twisted willow branches. The Chinese and the Turks used wicker shields. One of the chief advantages of this material is, that the lance of the enemy, especially if barbed, by piercing the shield, becomes entangled in the wicker work and is thus rendered useless to its owner.

- 79A. WICKER SHIELD, Ysabel Island, of the same form as No. 79, but with a slight concavity at the sides.

The question as to the form of the earliest shields used in Europe is open to controversy. The earliest known shields are those of bronze, attributed to the bronze period, which are found occasionally in England, Scotland and Wales, and less frequently on the continent, though specimens of this class have been found in Denmark and Italy. They are round, from 9 in. to 13 in., and 22 in. in diameter, with umbos in the centre for the hand, the flat part being usually ornamented with concentric rings. It does not, however, by any means follow from this, that the circle was the earliest form adopted for shields in Europe, though some of this form may have been used during the bronze period. Shields of the late Celtic period, dating, according to Mr. Franks, from about 200 or 100 B.C., have been found in England, of long oval form, specimens of which, from the Thames and Witham are in the British Museum, and long shields of the same form are seen on the arms of horsemen on some of the British coins. In 1847, a circular centre piece of the same period, and having similar ornamentation, was found in the Thames, and is figured in *Horæ Ferales*, showing evidence, by its rivets, of having been fastened to a shield, which may possibly have been of wood or some perishable material, and probably of the same oval or oblong form as the others of the same date. The more perishable parts of shields of this period would long since have decayed, leaving only the centre pieces and bosses, or such as were constructed entirely of metal. Strabo says that the Rhoxolani used shields of rough bull's hide, but wood and wicker work, as we have seen above, must also have been used to a great extent, and of such materials no trace would remain. The negroes of the Gold Coast, amongst whom many antique forms are preserved, are described by Bosman in the year 1700, as having long oblong shields of osiers 4 ft. to 5 ft. long, and 3 ft. broad, with centre pieces and corners of copper, "which they use with great dexterity, playing and parrying with them in the left hand." For the sake of lightness these would be preferable for ordinary purposes to such as were composed entirely of copper or bronze; and these bronze ones of the late Celtic period found in England, from the elaborate ornamentation upon them, and their extreme rarity, must no doubt have been the shields of the chiefs only. We may be certain, however, that no nation ever suddenly adopted a weapon of new and unusual form, unless it was copied from strangers. Where the weapon is indigenous the fashion always varies gradually, so that a

Form of the
earliest Euro-
pean shields.

Shields of the
bronze period.

continuous development is seen, and this stability of form enables us to judge by analogy, and proceeding from the known to the unknown, in the case of these early weapons to supply with great probability the information that is wanting.

We have already seen, that in Australia, the forms of shields show a continuous variation from the simple parrying stick, developing gradually into the long, oval form. In the Asiatic isles a still more advanced stage is reached, where the shield still being almost invariably of elongated form, varies in the details of its construction, being sometimes broader at one end, sometimes oblong, sometimes oval, at other times concave or convex, but always long and narrow, and always held by the hand in rear of the centre. In India the parrying horns of the antelope were covered by a hand guard, which probably expanded into the circular shield of that region. In Africa the simple parrying stick of the Dinka tribe, with the addition of a cow hide in front, to give greater breadth, became the oval shield of the Kaffirs and of Soudan. In other parts of Africa we find shields corresponding to the more advanced stage of development which prevails in the Asiatic archipelago, and showing a gradual increase in breadth. The Wagogo, of East Africa, have oblong shields. Burton describes the Wassanga as having a shield three feet long by one in breadth. The shield of the Kanemboo, called *Ngawa*, is made of *Fogo* wood, and is described by Denham and Clapperton, as being shaped like a Gothic arch, somewhat larger towards the spring of the arch than at the bottom, whilst that of the Sogurte, a tribe of the Kanemboo, is described by Barth as being broad at the top and bottom. The shield of the Musgu is 16 inches broad at the top, 22 inches at the bottom, and 40 inches in length. Amongst the cavalry of the Kano, the Tibboos, Tuaricks, Felatas, Bornouese, and Hausa, a shield is used of irregular oval form, larger below than above; this is a transition from the oblong to the oval and circular form, employed no doubt for facility of use on horseback, and corresponds in form to that of No. 79 from Ysabel Island, in the Asiatic archipelago. The circular form is also used, according to Clapperton, by the Kano and Hausa cavalry. Elsewhere we find amongst the Unyamuezi another variety, resembling a figure of 8, described by Grant and Speke, who also mention a fiddle-shaped shield carried by the people of Uganda, in the same region of Africa. These figure of 8 forms may have arisen from a development of the side notches of the Caffre and Nubian

shields above mentioned, or like those on the shields of the Greek and Persian *γερβια*, for the insertion of the spear shaft. They correspond to a similar form of shield from New Guinea, and to a bronze shield of late Celtic date in the British Museum. This form may also have been retained from a desire to combine breadth with lightness, or to enable the warrior to see his enemy by the side of his shield whilst, at the same time, covering his head and body, reminding us of the circumstance mentioned by Josephus concerning Nahash, king of the Ammonites, who put out the right eyes of his Jewish captives, in order that when their left eyes were covered by their shields they might be utterly useless in war. Everywhere throughout Africa as elsewhere, we find given forms of shields prevailing, with slight variations, over given areas, not necessarily occupied by the same tribe or nation, such breaks of continuity only being found, as might be expected, from the selection of particular varieties of form for special uses or special modes of combat prevailing in the tribes.

If we turn now to ancient European weapons and apply the observations made upon existing shield-bearing races to the elucidation of the scanty scraps of information respecting the weapons of the early barbaric races of Europe preserved in ancient authors, we shall find reason for assuming that in Europe, as elsewhere, the narrow parrying shield may have been the earliest form of weapon employed. In Livy's account of the battle between the Romans and the Gauls, on Mount Olympus, B.C. 189; he describes the shields of the Gauls as being long, but too narrow for their breadth to cover their bodies, and in the address of Cneius Manlius to the Roman soldiers when approaching the Gauls he speaks of the latter as "brandishing their shields in a peculiar manner practised in their own country;" this evidently refers to nothing else than parrying with their long narrow shields like the Africans, Australians, and Hill tribes of India; this parrying process is also evidently referred to in the mention of "*Clypeos Rotare*," by Sidoneus Apollinaris, when describing the Frank warriors of his time, A.D. 467. Of the shields of the Franks and Saxons, the next in point of antiquity to the bronze shields above-mentioned, nothing but the iron framework has remained to our time, this consists of an iron boss to guard and contain the hand (Nos. 80 and 81), and a single or branching bar of iron in continuation of the line of the handle; this framework and hand-guard, as discovered in the graves, very nearly resembles in character, though not accurately in form, the Egyptian

Long narrow shields probably the earliest form in Europe.

parrying shield (No. 64). To this was added on the outside a wooden shield, whether circular or oval is at present doubtful, but probably both forms were used. The Abbé Cochet, who examined a large number of Frankish graves, gives it as his opinion from the single transverse bar or branching bar in continuation of the line of the handle, that the shield was oval. In 1854, a statue believed to represent a German warrior was found at Mondragon in Vaucluse, carrying a long oval shield. On the Gallo-Roman tomb of Saint Rémi, Bouches du Rhône, a combat is represented in which all the warriors, Roman and other, are, armed with oval shields, and the oval would certainly be the form which, as we have seen, would be most readily developed from the long narrow shield of earlier times. In Demmin's *History of Weapons*, two shields are figured one, fig 19, of his work, a Spanish target of the 14th century; the other, fig 40, a target from the Ambras collection, Vienna; both of which from the projections at the ends, must have been used for parrying.

All the earlier forms of shields are held by a handle in rear of the centre; this, however, entirely occupied one hand. Mansfield Parkyn, in describing the round shields of the Abyssinians, says that they hold it by the handle when fighting, but in carrying it, the arm is slipped through the handle up to the elbow, thus leaving the left hand free. This, no doubt, in early times led to the form of handle having two armlets to enable it to be used on the arm, and thus in closed ranks especially, to enable the spear to be grasped with both hands. Herodotus says that this form of handle was first adopted by the Greeks from the Carians. In the European targets, the transition from the single handle to the double armlet is well marked, fixing the latter as the more recent method.

Circular
shields.

As a general rule, though not without exception, the circular shield must be regarded as the more modern form, and is employed chiefly by horsemen as being smaller and handier on horseback. Thus we find this form used by the horse-riding Indians of North and South America; by the Kano and Hausa cavalry in Africa; by the Abyssinians, by the Persian and Indian horsemen, the Botanese, Chinese, Japanese and Tartars. Barbosa speaks of them being used by the Moors of Ormuz in 1514, and in the kingdom of Cambay. The Scotch were amongst the last to use the circular target, and as a last vestige of this form of weapon, Grosse mentions that some of the 42nd Highlanders carried it in Flanders in 1747. These remarks will

enable the reader to appreciate the following forms, and to fill up in imagination the gaps which are wanting to complete a continuous history of the shield.

SCREEN 3.

EAST WALL.

EUROPEAN SHIELDS.

80. IRON UMBO of SHIELD, Anglo-Saxon, 5 inches in diameter, from the Anglo-Saxon burial ground, at Stow-heath, near Bury St. Edmunds. Found in 1851, with portions of a spearhead and knife.

81. IRON UMBO of SHIELD, Anglo-Saxon, $4\frac{1}{2}$ inches in diameter, having a flat button on the point, it retains some of the nails by which it was fastened to the wooden target. The specimen was found in a barrow in Lincolnshire; it was formerly in the Meyrick collection, and is figured in Pl. xlviii. vol. i.

These umbos, as already mentioned, form the centre pieces of the Saxon and Frankish shields, and contained the hand which held a transverse bar of iron that extended to the extremity of the shield, and formed the handle passing in rear of the umbo; the other part of the shield was of light wood or wicker-work, circular or oval, 18 to 20 inches in diameter, and covered with thick hide. According to the laws of Æthelstan, a fine of 30 shillings (a large sum at that time) was imposed on any one who covered a shield with sheepskin. The thickness of the wood is shown by the rivets in some of the Frankish specimens to have been 1 centimetre, about $\frac{2}{5}$ of an inch. The craft of shield making was an important one, as we are led to infer from the existence of "Shield-wright Street," in Winchester. The warrior was generally buried with the shield on his breast, as is shown by the umbo being frequently found on the lap of the body. Both Mr. Akerman and the Abbé Cochet agree that, with both Saxons and Franks, the shield, at least the shield with the iron umbo, was carried only by the higher ranks, and usually by those who also made use of the long double-edged sword, the ordinary weapons of the rank and file being the spear and knife, especially the latter. As with the Greeks so with the Saxons, to lose or cast away the shield was accounted the greatest possible disgrace, and severe penalties were imposed on any who

Anglo-Saxon
and Frankish
shields.

should unjustly impute such an occurrence to a warrior. (See works by Abbé Cochet, Akerman, Franks, Wright, and others, for information on this subject.)

82. IRON BOSS of SHIELD, Early English, $2\frac{1}{2}$ inches in diameter. Whilst the form of the umbo has been retained its size shows that it no longer contained the hand.

83. IRON BUCKLER, heart shaped, 1 foot 10 inches long, by 1 foot 5 inches in width, with two armlets to carry it on the arm. Italian. A survival of the Norman form of shield, date 1500.

Norman heart-shaped shields.

Origin of the form.

Shields of this form appear to have been in use during the 10th, 11th, 12th, 13th, and 14th centuries, and even later. In the 10th, 11th, and 12th centuries they are represented in contemporary paintings as being very large, extending from near the ground to above the shoulder. It was carried by a thong round the neck, a practice derived from the Romans, and it is sometimes represented with an umbo in the centre, and a handle for the hand. In the 13th and 14th centuries they are reduced to the size of this specimen, which was probably covered with leather and blazoned with the arms of the owner. The history of this form is instructive. It originated, no doubt, in the large oblong shields of the Germans, or in a pavois such as was used by the Assyrians and Egyptians in their sieges, the lower end resting on the ground. The great weight of these led to the reduction of the lower end, the upper end being retained to cover the vital parts of the body; it thus assumed a triangular or heart-shaped form, and appears to have been used as a pavois as late as the 15th century, as appears from a figure of a pavisier covering an archer, copied from the Roman de la Rose (Harl. MS. 4425), in Meyrick's *Ancient Armour*, vol. ii., Pl. xlvi. By degrees armlets were substituted for the handle in rear, and the size was reduced for convenience of carriage during the 11th and 12th centuries, until it entirely lost the significance of its original construction, and was retained as a survival during the 13th and 14th centuries; finally, the form of the shield and the arms represented upon it have been retained in heraldry to our own time. The practice, of painting the totems and badges of the owner on the shields is of very remote origin, it was practised by the North American Indians, the ancient inhabitants of Mexico, and the Greeks, and something of the same kind appears to be employed amongst some of the central African tribes.

84. Circular Italian BUCKLER of wood, faced with iron, with flame-shaped plates radiating from the central iron umbo, which is $4\frac{1}{8}$ in. in diameter. The shield is 1 ft. 3 in. in diameter, of the time of Edward IV. (15th century), and is remarkable on account of the umbo being retained in its original form and use; the hook is probably to hang it on to the guard or scabbard of the sword. This specimen was formerly in the Meyrick collection, see Pl. lxii. vol. i.
85. Circular BUCKLER of iron, 1 ft. 2 in. in diameter, 16th century. It has two armlets in rear, the form of the umbo is retained as a boss in the centre, but too small to contain the hand. Form of umbo retained as a survival.
86. Archer's SHIELD, 15th century, oblong, having a black cross on the outside, 3 ft. 4 in. in length.
87. Small oblong BUCKLER of wood and leather, 11 in. by 9, with hook to catch the sword of the enemy. Date, 1500.
88. Oval brass SHIELD, with large oval projection in centre to contain the arm. Probably 15th century.

EAST WALL.

CIRCULAR SHIELDS, FROM VARIOUS LOCALITIES.

89. Circular hide SHIELD, Conibo Indians, South America, 1 ft. 3 in. in diameter, including a 2-inch rim of wicker work on the circumference, with pendent feathers; exactly like the shields represented in Lord Kingsborough's Mexican Antiquities (by Augustine Aglio, London, MDCCCXXX.) The figures are there represented holding them in the left hand, and using the large obsidian-edged sword, "*Mahquahuitl*," in the right.
90. Circular hide SHIELD, 2 ft. in diameter, with handle of thongs in the centre. North American Indian.
91. Circular black SHIELD, India, 1 ft. 4 in. in diameter, convex on outside studded with metal bosses and half-moons.

In the year 1514, Duarte Barbosa, a Portuguese, speaks of the Canion, a sect of people in the kingdom of Malabar, whose business it was to make these shields; they were also great astrologers and fortune tellers. "Kings," he says, "and great persons consult them." At Mundavie, in the gulf of Cutch, there was a manufactory for making armour and shields of rhinoceros and buffalo's hides. The pieces are
33408.

boiled in oil until they become transparent, and such is the process that they are rendered proof against the edge of a sabre, and even it is asserted against some bullets. (See Meyrick's *Armour*, vol. ii., Pl. cxli.)

92. Chinese wicker SHIELD, 2 ft. 11 in. in diameter, convex on the outside, with a hole in the centre to see through; it has a bar and handle like those of the Greeks, to enable it to be carried on the arm.
93. Circular hide SHIELD, faced with cotton, Indian, 15 in. in diameter, convex on outside, handle and cushion in centre.
94. Circular SHIELD of wood, 10 in. in diameter, with an imitation umbo, faced on the outside with iron and small brass coins, handle in rear. ? Abyssinian.
95. Oval hide SHIELD, 2 ft. 1 in. in length, by 1 ft. 10 in. in breadth, with oval hide umbo in centre, to contain the hand, and a concavity at top and bottom. Nubia.
96. Circular hide SHIELD, 1 ft. 3½ in. in diameter, convex on outside, handle in rear of centre, the face ornamented in concentric rings stamped in relief. Somaulis, East Africa.
97. Small umbo-shaped SHIELD, of rhinoceros horn, 10 in. in diameter at base, and 5¾ in. in depth, with handle across the centre in rear. Used by the Arabs of Zanguebar.
98. SHIELD of similar form to No. 97, 9½ in. in diameter.

SCREEN 4.

EAST WALL.

BODY ARMOUR.

Not used by
some races.

Hides of
animals used
before metal.

As with the shields, so with body armour, it does not appear to have been employed by men in the earliest stages of culture. Man enters the world defenceless, and it is left to his intellect to supply those defences with which many of the lower animals are furnished by nature. Defensive armour, properly speaking, is not employed by the Australians, the Fuegians, the Bushmen, the Fiji, or the Sandwich islanders. It was from the thick hides of pachydermatous animals that humanity derived its first lessons in defence. Some, like the rhinoceros, are entirely armed in this way; others have their defences on the most vulnerable part, as in the case of the lion's mane, and the pad of the boar; the skin of the tiger is of so tough and yield-

ing a nature as to resist the horn of the buffalo when driven with full force against its sides. The condor of Peru has a coating of feathers so thick that eight or ten bullets may strike without piercing it. Amongst those animals which were given to warlike habits, natural selection would cause the survival of those that were best armed, and which would thus transmit their defences to their offspring. In the combats of primeval men, the victory would be with those whose imitative faculty enabled them to apply these natural defences of animals to their own persons with the best advantage, and who would live to educate their children in the use, and by degrees in the improvement of them. It is, therefore, to the defences of animals, that we must look to a great extent, for a starting point in studying the development of body armour. It was, without doubt, as a protection from the weather that clothing first suggested itself to man, and the same idea would prompt him to increase its thickness as a protection against the more formidable assaults of his own species. When the Esquimaux apprehends hostility, he takes off his ordinary shirt and puts on a deer-skin tanned in such a manner as to render it thick for defence, and over this he again draws his ordinary shirt, which is also of deer-skin, but thinner in substance. The Abipones and Indians of the Gran-Chako, arm themselves with a cuirass, greaves, and helmet, composed of the thick hide of the tapir; and the Yucanas also use shields of the same material. The war dress of a Patagonian chief, in the museum of the Royal United Service Institution, is composed of seven thicknesses of hide, probably of the horse, upon the body, and three on the sleeves. The chiefs of the Musgu negroes of Central Africa, are described by Barth, as using for defence a strong doublet of the same kind, made of buffalo's hide, with the hair inside. The Kyans of Borneo use hide for their war dress, and Mr. Hugh Low, colonial secretary at Labuan, in 1848, says that the skin of the bear and panther is most esteemed for this purpose. The inhabitants of Pulo Nias, an island off the western coast of Sumatra, according to Dobrizhoffer, use for armour a baju made of leather. According to William de Rubruquis, the Lesghi of Tartary wore armour of hog's skin in 1253. In the island of Cayayan, in 1519, Pigafetta says, that the inhabitants used a breast-plate of buffalo's hide. The Indians of Chili, in the 17th century, wore corslets, back and breast-plates, gauntlets and helmets of leather, so hardened that it is described by Ovalle as being equal to metal. According to Strabo, the German

Rhoxolani wore collars, helmets, and shields of bull's hide, though the Germans generally placed little reliance on defensive armour. The Ethiopians are mentioned by Herodotus as using the skins of cranes and ostriches for their armour. This collection contains a good specimen of this most primitive form of armour in No. 99, a breast-plate made of a crocodile's back, from Upper Egypt. The forms of these natural defences were retained and imitated even after superior materials had been introduced. Thus we learn from Herodotus that it was from the Lybians that the Greeks derived the apparel and ægis of Minerva as represented upon her images; but instead of a pectoral of scale armour, that of the Lybians was merely of skin. According to Smith's Dictionary of Greek and Roman Antiquities, the Greek thorax, called *στράδιος*, from its standing erect by its own stiffness, was originally of leather before it was constructed of metal; in like manner the word *cuiras* derives its origin from the Italian word *corazza*, itself derived from the Latin *corium*, hide, on account of the first Roman cuirasses having been made of that material. In Meyrick's Ancient Armour (Pl. cxli, fig. 3), there is an engraving of a suit of armour, supposed formerly to have belonged to the Rajah of Guzerat; the body of this suit is composed of four pieces of rhinoceros hide of the exact form represented in metal by No. 113 in this collection, showing that this class of armour was originally constructed of rhinoceros hide.

Quilted
armour.

In more advanced communities, as skins for ordinary purposes began to be replaced by woven materials, quilted armour supplied the place of hides. In those parts of the Polynesian Islands in which armour is used, owing probably to the absence of suitable skins, woven armour appears to have been employed in a comparatively low state of society. King's Mill, Pleasant Island, and the Sandwich Islands afford examples of this. No. 100 in this collection, is a specimen of this class of armour from the King's Mill Islands, composed of the plaited fibre of the husk of the cocoa-nut. The Egyptians wore a head dress and pectoral of a thickly-quilted material, up to the time of Xerxes, who employed their sailors armed in this way, during his expedition into Greece. Herodotus says that the Indians of Asia wore a thorax of rush matting. In 1514, Barbosa found armour of quilted cotton, called *laudes*, in use by the Muslims of Guzerat, and the Deccan. No. 130 in this collection is an example of quilted armour from India, a suit of quilted armour formerly belonging to Koer Singh, was lately pre-

sented to the Royal United Service Museum, by Sir Vincent Eyre; the body armour found upon Tippto Saib at his death, which is in the same museum, was thickly quilted. Upon the breast it was composed of two sheets of parchment, and nine thicknesses of padding, composed of cocoons of the *Saturnia Mylitta*, stuffed with the wool of the *Eriodendron anfractuosum*, D.C., neatly sewn together. The Aztecs and Peruvians also guarded themselves with a wadded cotton doublet; quilted armour or thick linen corselets were used by the Persians, Phœnicians, Chalibes, Assyrians, Lusitanians, and Scythians, and also by the Greeks and Romans. By the Persians it was used to a much later date, and in Africa to this day quilted armour of precisely the same kind is used both for men and horses, by the Bornouese, as described by Denham and Clapperton. As a connecting link between quilted and scale armour, to be hereafter described, No. 110, a pair of Italian culottes, may be taken as an example; this armour consists of small oblong plates quilted in between two pieces of canvas; it was used in Europe as late as the middle of the 16th century.

There can be little doubt that the horny scales of certain animals, if they did not actually suggest the idea of scale armour, were often copied after mankind had conceived the notion of arming themselves in this manner. It has been stated on the authority of Arrian, that the Greeks distinguished scale armour by the term *λεπιδωτός*, expressive of its resemblance to the scales of fish, whilst the jointed armour, composed of long flexible bands, like the armour of the Roman soldier and the *écrevisses* of the middle ages, was called *φολιδωτός*, from its resemblance to the scales of serpents. A similar origin for scale armour is shown by a breast-plate of the Bogo Dyaks, in the Royal United Service Institution; the process of constructing this kind of armour was described in a notice attached to a specimen in the Exhibition of 1862; the scales of the pangolin are collected by the Bugis, as they are thrown off by the animal, and are stitched on to bark with small threads of cane, so as to overlap each other in the same manner that they are arranged on the skin of the animal. Capt. Grant, in his "Walk across Africa," mentions that the scales of the armadillo are in like manner collected by the negroes of East Africa, and worn on a belt three inches broad, as a charm. The Kians, inhabiting the eastern coast of Borneo, form a kind of armour composed of small shells, placed one overlapping the other like scales. There is evidence from

Scale armour.

early writers to show that scale armour originated in a similar manner in ancient times. The Sarmatians and Quadi are described by Ammianus Marcellinus, as being protected by a lorica composed of pieces of horn planed and polished, and fastened like feathers upon a linen shirt. Pausanias also, who is confirmed by Tacitus, says that the Sarmatians had large herds of horses, that they collected the hoofs, and after preparing them for the purpose, sewed them together with the nerves and sinews of the same animal, so as to overlap each other like the surface of a fir cone, and he adds that this lorica was not inferior to that of the Greeks, either in strength or elegance. The Emperor Domitian, had after this model a cuirass of boars' hoofs stitched together. A fragment of scale armour of horn was found at Pompei, and a similar piece composed of the hoofs of some animal, stitched and fastened so as to hold together without the aid of a linen corselet, from some part of Asia, is figured in Meyrick's Ancient Armour, Pl. iii. Lastly, we have an ancient stone figure, described in the third volume of the Journal of the Archæological Association, which is covered with armour of this description, having an inscription which is said to be in some unknown language cognate to the Greek.

When the use of metal came into general use these scales were imitated in bronze and iron. It was thus employed by the Egyptians and also by the Persians, Assyrians, Philistines, and Dacians; the armour of Goliath is believed to have been of scales from the fact of the word "*kas-kassim*" used in the text of 1 Samuel xvii., being the same employed in Leviticus and Ezekiel to express the scales of a fish, as we learn from a note to the first book of Samuel in the Pictorial Bible. No. 102 in this collection is an example of armour of this description, composed of brass scales, and No. 103, from Japan, shows four, if not five distinct systems of defence, the back and breast being of solid plates, constructed to represent *écrevisse* armour; the sleeves and leggings are composed of small pieces of iron stitched on to cloth and united with chain, whilst the other portions are quilted with enclosed pieces of iron like No. 110.

Scale armour was used in Europe on the hauberks or as Brigandine and Jazerine jackets from the 8th to the 16th centuries. Nos. 108 and 109 are specimens of the front and back of a Brigandine jacket of the 15th century. On comparing this with No. 107, a Chinese suit of the same kind of armour, it will be seen how closely the two correspond in

regard to the method of fastening the scales. In both the oblong scales overlap above and on one side. The scales are on the interior, and the studs with which they are fastened to the canvas covering form an ornamental pattern on the outside. An advance on this method is shown in No. 111, a jacket of linked scales of the 16th century, each scale is here fastened to the other with a ring, so that it holds together independently of any canvas covering. No. 112 is a suit of Mogul armour, portions of which correspond to the linked scales of the preceding specimen, showing evidence of a parallel progress in the two continents.

Resemblance of European and Chinese scale armour.

The rings of chain armour, like the scales, were at first sewn on to the hauberk flat and side by side, drawings of which are seen on the Bayeux tapestry and other early illustrations. No. 101 is an imitation of a Beringt hauberk of this kind from the Meyrick collection. The numerous bronze rings discovered in association with bronze antiquities lend force to the supposition that this sort of armour may have been used even in prehistoric times. This was followed by the rustred coat, in which the rings were made to overlap like scales, still being sewed on to the hauberk like the Beringt coat. Lastly, the rings were made to interlace, each ring being joined to four others, thus rendering it independent of the hauberk; but another mode of accomplishing this object is shown by a specimen in the glass case, No. 116. It is probably a piece of horse armour, in which the large rings, $1\frac{1}{4}$ inches in diameter, are placed side by side as in the Beringt coat, and fastened together with smaller rings joining them at right angles; the ends of the rings are here fastened together by rings twisted round and bent back. Three modes of fastening the rings of ordinary chain armour appear to have been employed both in European and Asiatic armour; one by riveting, a second by riveting each alternate ring, the other being cut out of the solid; a third by simply joining the ends without riveting, in this manner the rings are said to be *jumped*. It was for some time supposed that chain armour was introduced into Europe during the crusades, but it is now known to have been employed before that time.

Chain armour.

During the 16th century the scale and chain armour was gradually superseded by the cuirass, of which Nos. 117 to 120 are examples, and this being proof against a sword thrust has continued in use for cavalry until our own time; but about the middle of the 17th century it began to be disused for general purposes, being rendered useless by the improvement of fire-arms, the gorget or upper part surrounding the

Plate armour.

Disuse.

neck and shoulders only being retained ; this ultimately subsided into the small half-moon shaped gorget of brass, of which No. 123 is a specimen used in the British army at the commencement of the present century, and still used in some continental services as a sign that the officer is on duty. These are the only remaining vestiges of body armour in use by the infantry. A vestige of scale armour continues to this day in the Albanian jacket, which is a relic of the costume of the Greek and Roman age, and on which the scales are still represented in gold embroidery. An attempt to revive the use of armour in the form of a military waistcoat with a steel breast-plate underneath, No. 124, was made during the last American war, and a shop for the manufacture of them was set up in New York, but they were soon abandoned.

The articulated armour of the 15th and 16th centuries, called "*écrevisse*" by the French, is another example of the adoption of natural forms. Fluted armour also, of which No. 114, a suit of Janissary's armour of the 16th century, is an example, affords an instance of a mode of combining strength with lightness, derived from copying the imbricated shells of the Testacea.

SCREEN 4.

EAST WALL.

BODY ARMOUR.

99. Egyptian BREAST-PLATE, made of a crocodile's back, (formerly in the Meyrick collection, pl. cxlviii. fig. 19).
100. A suit of King's Mill Island ARMOUR, made of plaited cocoa-nut husk fibres woven into a compact mass, the arms and leggings are of netted cinnet of the same material.

This armour sufficed to protect the body from the weapons edged with shark's teeth, in use by these people ; the helmet used with this armour consists of the skin of the porcupine fish cut open at the head and stretched sufficiently to admit the head of a man. (See Wilkes's Exploring Expedition, vol. v. p. 47.)

101. Suit of Beringt ARMOUR, imitation of earliest form of chain armour, covered with contiguous iron rings sewn on to a hauberk.
102. ARMOUR composed of brass scales. Locality not known. A jacket with pieces to come over the shoulders.
103. Suit of Japanese ARMOUR, showing four different kinds of armour.

104 to 106. Three model suits of Japanese ARMOUR.

107. Suit of Chinese SCALE ARMOUR of blue satin, embroidered in gold and lined with canvas. On the inside are oblong iron scales $3\frac{1}{2}$ inches by $2\frac{1}{2}$ inches, slightly convex towards the outside. The scales overlap each other about half an inch; they are fastened to the canvas by brass studs, the heads of which form an ornamental pattern on the outside.

108. English Brigandine JACKET, 15th century, composed of thick canvas, on the inside of which are iron oblong scales, $1\frac{3}{4}$ inches by $\frac{3}{4}$ inch, slightly convex towards the outside, and overlapping each other about $\frac{1}{4}$ to $\frac{1}{2}$ an inch; they are fastened to the canvas by iron studs, the heads of which form an ornamental pattern on the outside. The mode of arming this jacket is the same as that of the Chinese specimen above described.

109. BACK-PIECE of English Brigandine jacket. 15th century.

110. CULOTTES. Italian. Probably 16th century. Consisting of small oblong plates of iron 1 inch by $\frac{1}{4}$ inch, quilted between two pieces of canvas. The garment extends only to the knee.

111. JACKET of linked scales. Vienna. 16th century. Consisting of rhomboidal flat plates about $\frac{3}{4}$ inch sides; linked together with iron rings so as to hold together without any lining, the scales overlapping.

112. Suit of Mogul scale and chain ARMOUR. The scales at the back are held together by rings in the same manner as in the preceding specimen, except that they overlap only above and below. The sleeves and skirt consist of chain mail riveted; the breast is armed with large plates of steel convex on the outside.

113. Six pieces of POLYGAR'S ARMOUR inlaid with gold ornamentation. These are intended to protect the vital parts over a suit of chain mail. The four breast and side pieces are called "*Char aina*," or the "four mirrors;" they appear to have been originally made of hide.

114. Three pieces of JANNISSARY'S ARMOUR. 16th century. Composed of circular fluted breast and back pieces and shoulder pieces, fastened together with riveted chain armour. On the sides are fastened two fluted shells for the purpose of showing a natural defence of the same kind, combining lightness with strength.

115. A suit of Japanese CHAIN ARMOUR, consisting of short jacket and head covering; the links are not riveted.
116. Twenty fragments of CHAIN ARMOUR. European and Oriental.
117. Suit of PIKEMAN'S ARMOUR for the defence of ramparts, consisting of breast-plate, tassets, arm-piece, and helmet; the latter with supports to rest on the shoulders.
118. BREAST-PLATE and BACK-PIECE. 17th century.
119. BREAST-PLATE and BACK-PIECE. 17th century.
120. Burgonet SKULL CAP. 17th century.
121. Fluted conical HELMET, belonging to No. 114. 16th century. The form of this was no doubt derived from the Assyrian conical helmet.
122. German MORION. 16th century. The fleur-de-lys upon it was the badge of the civic regiment of the city of Munich, and is the symbol of the Virgin, having nothing to do with the arms of the King of France. (Demin.)
123. Two officers' GORGETS. End of 18th century. The last vestige of body armour in use by the infantry. It is still worn in some continental armies by officers on duty.
124. Officer's WAISTCOAT, lined with a metal plate, made in New York, and used for a short time by some of the American officers during the late war.
125. Modern suit of CHAIN ARMOUR of English manufacture, constructed for oriental uses. The links are not riveted.

NORTH ARCH.

HEAD-DRESSES AND HELMETS FROM DIFFERENT LOCALITIES.

126. HELMET, composed of the skin of a giraffe's head, with the ears and mane.

Origin of
crests.

The origin of the hairy crests of our helmets is clearly traceable to the custom of wearing for head-dresses the head skins and hair of animals. The Asiatic Ethiopians used as a head covering the skin of a horse's head, stripped from the carcase together with the ears and mane, and so contrived that the mane served for a crest, like the present specimen, whilst the ears appeared erect upon the head. Hercules is represented wearing a lion's skin on his head. These skins were worn in such a manner that the teeth

appeared grinning at the enemy over the head of the wearer, as represented on a bronze in the Blacas collection. Similar head-dresses are worn by the soldiers who carry the standards on Trajan's column. The horns worn on the heads of some of the North American Indians and in some parts of Africa are no doubt derived from this practice of wearing on the head the skins of animals, and their appendages. The helmet of Pyrrhus, king of Epirus, was surmounted by two goat's horns. These horns were copied in bronze on the helmets of the Thracians, the Belgic Gauls, and others. An ancient British helmet of the late Celtic period, found in the Thames, and now in the British Museum, is surmounted by straight horns of the same material. Traces of this custom may still be seen in heraldry.

127. Conical HELMET of hide. Gaboon, West Africa.
128. HELMET of the Mpongue king. Gaboon, West Africa. With wings on the sides, ornamented with beads.
129. HELMET of cylindrical white beads, with neck-guard at back, worn by the Nouaer on both sides of the Nile, from 8 to 10 degrees N. latitude. Similar in form to the ancient Egyptian head-dress. Obtained by Mr. Petherick. (*See Journal of Royal United Service Journal*, vol. iv. No. xiii.)
130. Indian quilted HELMET, of nearly the same form as the last, with moveable nose-guard.
131. Mogul HELMET, of the same form as the last, of mail and chain.
132. Sandwich Island HELMET of cocoa-nut fibre, originally covered with coloured feathers, with crest of the same material. In form this resembles the Grecian helmets in a very remarkable manner.
133. Cane wicker HELMET of the Aboors. Assam.
134. Cane wicker HELMET of the Digaroo Mishmees. Assam, 1867.
135. Conical hat of palm leaves.
136. Bronze Etruscan HELMET. This form is fixed as being of the true Etruscan type, by a specimen in the British Museum, which has a Greek inscription on it (*see drawing*) stating it to be dedicated by Hiero, tyrant of Syracuse, to Jupiter from the spoils of the Etruscans, whom he had defeated in a naval engagement off Cumæ, B.C. 474. In form this helmet agrees with those found in the Etruscan tombs. (*Horæ Ferales.*)

137. Bronze HELMET with nasal and eye-holes. This is also fixed as being the true Greek type by a specimen in the British Museum, dedicated by the Argives from the spoils at Corinth; this is the form of helmet seen constantly on the earlier Greek vases. (Horæ Ferales.) The nasal and eye-holes show it to have been constructed to guard the face, but it appears usually to have been worn on the back of the head with the visor on the forehead. Thus worn the nasal and eye-holes become reduced in size and conventionalised (as shown in the drawings) and ultimately were represented only by engraving on the top of the helmet, examples of which may be seen in the British Museum; thus affording one of numerous examples of the survival in ornamentation of forms originally designed to serve a useful purpose. A similar kind of helmet, conical, but with nasal and eye-holes, exactly resembling the Greek, was used by the Normans in the 12th century, and appears to have been retained occasionally as late as the time of Edward II.

138. Bronze Etruscan GIRDLE worn round the waist.

SCREEN 6.

BOOMERANGS.

Arose from the
selection of
natural forms.

The boomerang is a flat curved stick used by the Australians, the Africans, and Hill tribes of India, for throwing with a rotatory motion at animals, and as a weapon of war. It is a term commonly applied to weapons which are supposed to have the property of returning to their owner when thrown, but this characteristic, it will be seen, is not generic, and applies only to a particular form of this weapon. This series is arranged with the view of explaining the origin and development of the weapon, and of showing that it was not an *invention*, as some suppose, which would have required far greater knowledge of the laws of projectiles than is possessed by the people who use it, but simply a weapon accidentally produced and retained by the selection of the natural forms of the stems of trees and branches suitable for the purpose. When it is considered that the Australians, like the primeval inhabitants of other parts of the globe, had nothing with which to construct their weapons but flints and stones, and the enormous labour of working with these materials, it is easy to understand why all the Australian weapons are formed on the grain of the wood, on account of the great time which it would require

to chip them into any other form than that provided by nature. The curves and forms of all the Australian weapons are therefore as infinite as the curves of the branches out of which they are formed, and afford an immense variety of shapes out of which to select those which in practice are found to be best suited to the various purposes of the user. The plain stick as cut from the tree would be the first weapon to suggest itself, and this would be used for throwing as well as for striking. Nearly all savages are in the habit of throwing their weapons; even apes are known to throw stones, the North American Indian throws his tomahawk, the Indians of the Gran Chaco throw their "*macana*," a kind of club, the Kaffirs and the negroes of Western Africa throw the knob kerry. Grant says that the women of Faloro, East Africa, hold their knives by the tip of the blade and throw them at their adversaries. The Fiji Islander throws his knob-headed club, the New Zealander his "*pattoo pattoo*," and the Australian his "*dowak*." Even the Franks are supposed to have thrown their "*francisca*," and we learn from Blount's travels in 1634, that the Turks used the mace for throwing as well as for striking. A curved stick, when thrown from the hand rotates of its own accord, and it would soon be discovered that a flat curved stick formed by splitting a branch in half down the centre would fly further than a round one. The savage would be entirely ignorant of the reason for this; he would not understand that the rotation would cause the thin edge to be presented constantly to the resistance of the atmosphere in front, whilst the flat sides for the same reason would impede its fall; but he would find in practice that the thinner he made it the further it would fly, and this really constitutes the generic characteristic of the boomerang, and is applicable to those of all the countries represented upon this screen. By degrees it would be found that by throwing the boomerang at an angle upwards, it could be made to return; and this would be extremely useful to the savage, for by that means, in throwing his weapon at birds over swamps and rivers, it would return to the bank from which he threw it, and be saved. This depends on the movement of rotation continuing after the forward movement has ceased, by which means the axis of rotation continuing parallel to itself, and the fore part of the weapon being tilted upwards, in falling, it glides backwards on an inclined plane, in the same manner that a kite, when the string is suddenly broken, falls backwards for some distance on the plane of its length; in other cases the axis of rota-

Races which
throw their
weapons.

Theory of its
flight.

Development
of form.

Australian.

Dravidian.

Egyptian.

tion gradually changing its direction the weapon turns over and falls back topside turvey. But the savage would arrive at this knowledge empirically, without the slightest effort of reason. Finally, it would be discovered that when the boomerang was slightly twisted in a particular direction, like the two arms of a windmill set in oblique planes, it would screw itself up in the air. But this he would arrive at more probably by imperfect workmanship, owing to the difficulty of constructing the weapon on a true plane than from any knowledge of its principle of action. All these different stages of development may be seen in any number of Australian boomerangs collected together. Some will be found to be too straight to receive a proper rotatory motion from the hand of the thrower, others will be too thick and heavy to fall back on an inclined plane, and will fall forward by their weight. Some will have a twist, but the majority will be without this addition. Some will bulge out in the centre, whilst others will be of the same thickness throughout. Some will have a symmetrical section, whilst others will be flat on one side and convex on the other. They will all vary in the degrees of curvature, and some will have a reversed curve, so as to approach the form of an S. This curve depends entirely on the shape of the branch out of which the weapon is made. Nos. 139 to 161, Figs. 8 to 12, on the top row, are arranged from left to right to show the transition from the simple stick to the boomerang, and ultimately to the *malga*, another form of Australian weapon used as a war pick. Nos. 172, 173, and 174, Fig. 19, are fac-similes of the boomerangs of the Kolis of Guzerat, who are of the Dravidian or black aboriginal race of the Deccan of India. The originals are formed on the grain of the wood, like the Australian boomerang which they resemble in form, except that being thicker and heavier they will not return to the thrower, as is the case with some of the Australian specimens. An improved form of this weapon, Nos. 176 to 179, Fig. 20, is used by the Marawás of Madura, and some of these are much thinner than the boomerang of the Kolis, and in practice I have found them to fly with a return flight like the Australian boomerang. This form is also copied and used in steel, and has no doubt given rise to the use of the "*chakkra*," or war quoit, which is used in the same manner for throwing at an enemy, a rotatory motion having been previously given it by spinning it on the finger of the right hand. Similar boomerangs were used by the ancient Egyptians, and are represented on their monuments. Nos. 167, 168, and 169, Fig. 18, are fac-similes of an Egyp-

tian boomerang in the British Museum, which was obtained from the collection of James Burton, Esq., jun., and is described as "an instrument for fowling, for throwing at, and "knocking down birds." In order to ascertain by experiment whether this was really a boomerang, I had these facsimiles made with great care from the original of different kinds of wood, and they have been found by experiment to fly like a boomerang, ranging about 100 paces, and returning to within a few feet of the thrower. This experiment settles the question of the use of the boomerang by the Egyptians, which, owing to the ill-defined representations of them in Egyptian sculptures, was previously open to dispute. Sir Samuel Baker has described a wooden boomerang, used in Abyssinia, called the "*trombash*," a word closely resembling the word used in Australia for a similar class of weapon, No. 157, viz. "*tombat*," Fig. 11. It is of "hard wood, about 2 feet "in length, and the end turns sharply at an angle of 30°," exactly like a variety of the Australian boomerang, which is not represented in this collection. The Djibba negroes also use a wooden instrument for throwing at birds, shaped like two sides of a triangle. Nos. 180 to 186, Fig. 22, are iron implements, called *hunga munga* by the negro tribes south of Lake Tchad; "*danisco*" by the Marghi, "*goleyo*" by the Musgu, and "*njiga*" by the Bagirmi; showing that the names for these weapons vary as much in Africa as in Australia, where nearly every tribe has a different name for the boomerang.* These African iron weapons are thrown

Use in Egypt confirmed by experiment.

Modern African.

* The greater stability of the material arts as compared with the fluctuations in the language of a people in a state of primæval savagery is well shown by a consideration of the weapons of the Australians and the names by which they are known in the several parts of that continent. These people, from the simplicity of their arts, afford us the only living examples of what we may presume to have been the characteristics of a primitive people. Their weapons, respecting the distribution of which we have more accurate information than we have of their vocabularies, are the same throughout the continent; the shield, the throwing-stick, the spear, the boomerang, and their other weapons differ only in being thicker, broader, flatter, or longer in different localities; but whether seen on the east or the west coast each of these classes of weapons is easily recognised by its form and uses. On the other hand, amongst the innumerable languages and dialects spoken by these people, it would appear that almost every tribe has a different name for the same weapon. The narrow parrying-shield, which consists of a piece of wood with a place for the hand in the centre, in South Australia goes by the name of *Heileman*, in other parts it is known under the name of *Mulabakka*, in Victoria it is *Turnmung*, and on the west coast we have *Murukanye* and *Tamarang* for the same implement very slightly modified in size and form. Referring to the comparative table of Australian languages compiled by the Rev. George Taplin, in the first number of the "Journal of the Anthropological Institute," we find the throwing-stick, which on the Murray River is known by the name of *Yova*, on the Lower Darling is *Yarrum*, in New South

Persistence of form as compared with the names.

with a rotatory motion, and inflict bad wounds with their projecting blades: they vary constantly in form, as may be seen by the specimens here exhibited, and their use extends across Africa from the Upper Nile on the east through Central Africa by Lake Tchad to the negroes of the Gaboon in West Africa. Here, as also in parts of Central Africa, these weapons assume the form of a bird's head, as is shown in the specimens from these regions, Nos. 187 and 188, Figs. 23 and 24, where the triangular opening in the blade represents the eye of the bird. This practice of adopting the forms of birds and animals' heads when the resemblance is suggested by any of the varieties through which a weapon passes, is one to which we shall have to draw attention in describing the war weapons from other localities. When in addition to the foregoing remarks, it is shown that the boomerang, like the parrying shield already described, is found in use in its most primitive form by the black and dark coloured races of Southern Europe, which Professor Huxley, on physiological grounds alone, has traced to the Australioid stock, viz., the Australians, the Dravidians, and the Egyptians (see map on screen), it is evident that the subject is well worth the attention of those who are interested in tracing the slow and gradual development of civilization amongst the primitive races of mankind. For further remarks on this subject see two papers on Primitive Warfare in the Journal of the Royal United Service Institution, read respectively in

Coincidence of
distribution
with Austra-
lioid race.

Wales it is *Wommurrur*, in Victoria *Karrick*, on Lake Alexandrina *Taralye*, amongst the Adelaide tribes, South Australia, it is *Midla*, in other parts of South Australia it is called *Ngeweangho*, and in King George's Sound, *Miro*. None of the weapons show less variety of form than the boomerang; on the Murray River this is known by the name of *Wanya*, on the Lower Darling *Yarrumba*, on the North Darling *Mulla-Murraie*, on Lake Pando *Wadna*, on the Liverpool Plains *Burran*, in Victoria *Kertom*, on Lake Alexandrina *Panketye*, and in King George's Sound *Kyli*. Between the majority of these names it will be seen that it is impossible to trace the faintest resemblance of sound. Yet no one, it is presumed, would be so irrational as to suppose that so peculiar a weapon as the boomerang could have been invented independently in as many different localities as there are different names for it; nor is it reasonable to suppose that such extremely simple weapons as those in use by the Australians, should have spread from a common centre, subsequently to the establishment of the various languages as they are now spoken. The weapons of the Australian, as I have shown in my paper on Primitive Warfare, published in the "Journal of the Royal United Service Institution," are all traceable, like the languages, to primitive forms, which are the natural forms of stumps and stems of trees; like the languages they have also varied and diverged; but whilst the names for them have changed so completely as to present no signs whatever of connexion in the different tribes, the weapons themselves have varied so slightly as to be recognised at a glance in all parts of the continent.—*Address to the Department of Anthropology, at the Meeting of the British Association, 1872, by Col. A. Lane Fox.*

June 1868 and June 1869. Nos. 162 to 166, Figs. 13 to 17, show the transition of form from the Australian waddy or hand club to the hatchet, by the gradual enlargement of one side, and ultimately to a hatchet-shaped boomerang, used only as a missile.

SCREEN 6.

AUSTRALIAN BOOMERANGS.

The following specimens are arranged from left to right, to show the transition from the Dowak to the Boomerang and from the Boomerang to the Malga :—

139. DOWAK. Plain, straight, round, stick. Western Australia. Used for throwing at animals. Fig. 8.
140. DOWAK, with gum handle, straight and round.
141. DOWAK. Straight, of the same form as the preceding, flattened.
142. DOWAK. Victoria. Round and curved. Used for throwing.
143. DOWAK, of the same form, flattened, the curve following the grain of the wood, which in this, as in the subsequent specimens, gives the curvature of the weapon. This represents the first introduction of the boomerang form.
144. Curved flat CLUB or BOOMERANG, having nearly the same curvature as the last; the knots in the wood are stained black by way of ornament, and other black spots added to produce symmetry. This weapon, though of the boomerang form, will not return to the thrower. Fig. 9.
145. Curved SWORD or BOOMERANG. Flatter and more curved than the last, with a handle at one end marked by the usual scratches to secure a firmer grip to the hand. In this specimen the boomerang form begins to show itself more fully, but still the handle shows that it is chiefly used in the hand.
146. BOOMERANG. Narrow and flat, having the same curvature as the last. The labour employed in forming these weapons with the stone hatchet, frequently held in the hand without a handle, is shown by the chippings on the surface. In this specimen the boomerang form is complete, and it is used only as a missile; there is a slight twist in the blade, causing it to rise in the air, on the principle of a screw propeller.

147. Red-coloured BOOMERANG. Flatter, and better adapted for flight than the last. From the county of Gloucester, Australia. Fig. 10.
- 148 to 156. BOOMERANGS. Showing a gradual increase in curvature, one having a reversed curve approaching the form of an **S**.
157. Red coloured weapon called TOMBAT, from Laury's flat, county of Gloster, Australia. In this form we see a connecting link between the boomerang and the malga, resembling the latter in the unequal length of the arms, and the former in having no handle, and being probably used as a missile. Fig. 11.
- 158 to 161. War picks called MALGA. Used both as offensive weapons in the hand, and for parrying the weapons of the assailant. They differ from the preceding specimens in being rounder and in having one arm longer than the other, having also handles on the larger arm; their curvature, as in the preceding specimens, depends on that of the branch out of which they are formed. This Australian weapon resembles those from New Caledonia (Nos. 191 to 197). Fig. 12.

Development
of hatchet-
boomerang.

The following specimens illustrate the transition from the waddy or club with a swell at one end, symmetrically formed in the first instance, the succeeding specimens showing a gradual development of one side, on which the blow is delivered, until it approaches the form of an axe, diminishing at the same time in thickness, so as to become a hatchet-shaped boomerang, in which form it is used as a missile only :—

162. WADDY. Symmetrically formed, with a rounded stem and a lozenge-shaped swell at the end to give weight to the blow. Ornamented with rows of parallel indentations. Fig. 13.
163. WADDY. Of the same form as the last, but having an unsymmetrically-formed head, the side on which the blow is delivered being slightly more prominent than the other. It has a handle of woven hemp. Fig. 14.
164. WADDY. Flatter than the preceding, and slightly curved; the projection on one side begins to assume the form of a blade in this specimen; it has the usual roughened handle showing it to be still used as a hand weapon. Fig. 15.

165. WADDY, or wooden hatchet. The projection on one side has in this specimen fully assumed the form of a hatchet blade with convex edge; the stem and blade are however, still rounded, and therefore ill adapted to be used as a missile; the curvature is the same as in the preceding specimen, but the handle has disappeared. Fig. 16.
166. HATCHET-BOOMERANG. The general outline and curvature is the same as in the preceding example, but the thickness is reduced to about three-eighths of an inch in order to adapt it for flight. There is a slight twist in the blade like many of the boomerangs. The part where the handle is shown in Nos. 163 and 164 in this specimen is flat and sharp edged, showing that in this stage of development it was not used for striking in the hand, but only as a missile. Fig. 17.

EGYPTIAN BOOMERANG.

- 167 to 169. Fac-simile of an ancient EGYPTIAN BOOMERANG, in the British Museum, the original of which was obtained from the collection of James Burton, Esq., and is described as "an instrument for fowling, for throwing "at, or knocking down birds, as is continually represented "on the walls of the tombs." These fac-similes were made of different kinds of wood from the original, for the purpose of experiment, as stated in the preceding note. It was found that the weapon ranged 100 paces, and with practice could be made to return to within a few feet of the thrower. Fig. 18.

DRAVIDIAN BOOMERANGS.

170. Flat CLUB of hard wood, slightly curved, believed to be from Central India.
171. Flat CLUB, like No. 170, with increased curvature.
- 172 to 174. Fac-similes of the BOOMERANGS of the Kolis of Guzerat, made by Colonel Fox for the purpose of experiment, as stated above. These differ from the originals in being cut across the grain, whereas the original specimens in the India Museum conform to the natural curvature of the wood, like the Australian boomerangs. Fig. 19.
175. Fac-simile of another BOOMERANG, from the same locality, with an oblong cross section.

- 176, 177. BOOMERANGS of the Marawar of Madura. Fig. 20.
 178. Fac-simile of another BOOMERANG, constructed for the purpose of experiment.
 179. Fac-simile of another BOOMERANG, thinner than the preceding and better adapted for flight. This form is also constructed of steel, and used for the same purpose.

MODERN AFRICAN IRON BOOMERANGS.

180. Iron PICK. Dor tribe of negroes, White Nile. Obtained by Consul Petherick in 1858. Used as a missile.
 181. Curved iron weapon, used for throwing. Dor tribe, White Nile. Obtained by Petherick. Fig. 21.
 182. Curved iron projectile. Mundo tribe, White Nile. Obtained by Petherick. A weapon of this form is represented in the Egyptian sculptures. Used also as a missile.
 183 to 185. Iron projectile called *Hunga Munga*, in Central Africa, showing varieties of form, but identical in principle. Obtained by Petherick from the White Nile. Fig. 22.
 186. Iron BOOMERANG, somewhat different in form, from the Upper Nile.
 187, 188. Iron BOOMERANG, shaped in the form of a bird's head, the triangular openings representing the eyes. Used by the Fan negroes, Gaboon, West Africa; (Fig. 23), one in a sheath. In Denham and Clapperton's travels an illustration is given of one of these instruments from Central Africa, formed like the head and neck of a stork. Fig. 24.
 189, 190. Two Spanish KNIVES, used for throwing, the blades being bent at an angle with the handles.

BIRD-HEADED PICKS, NEW CALEDONIA.

The following specimens from New Caledonia, resembling the malga of Australia, and said to be used as root diggers as well as for war, are arranged to show the gradual adoption of the idea of a bird's head, probably of the heron or egret species, suggested, no doubt, by the form and use of this implement. These weapons, like those of the Australians, are formed on the grain of the wood, and may very probably have been adopted from Australia. The plough appears in some parts of the world to have origi-

27 enl.

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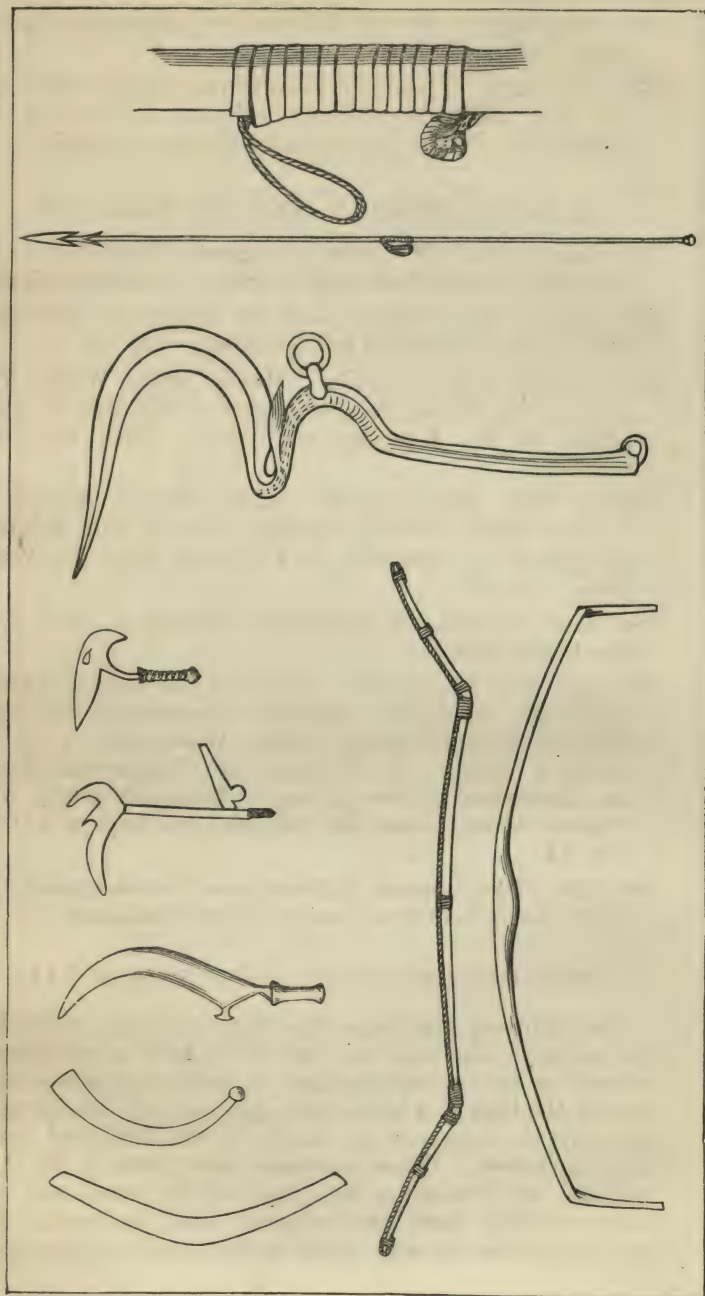
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PLATE II.



nated in like manner from the use of the stem of a tree as a body and beam with a branch at right angles as a share, and it is still used in this form in some countries.

191. PICK. This is probably the most primitive form of the weapon, and closely resembles the Australian malga, differing from it only in the swell at the handle, which is peculiar to all the New Caledonian weapons. It is formed of two branches or a stem and root at right angles, and the place where a third branch sprang out may be seen at the apex of the angle.

191. PICK. The same form. The trimming of the root of the third branch at the apex of the angle may be noticed in this specimen. The practice amongst savages of converting any natural imperfection, when possible, into an ornament, has been noticed in No. 144, Fig. 9, where the knots of the wood in an Australian boomerang have been painted black, and the intervals between the knots divided into similar points, so as to give the effect of design. With the same object the root of the branch has here been trimmed into an ornamental ridge.

193. PICK. The same form. Here the trimming at the apex of the angle, to which attention has been drawn in the two preceding examples, has suggested the idea of the crest of a bird's head, thus forming a parallel to the development of a bird's head represented in the series of African iron boomerangs, Nos. 187 and 188, Figs. 23 and 24, and also to those shown in the series of clubs on screen, Nos. 392 to 420, Fig. 40.

194 to 197. PICKS. Similar forms of implements, in which the idea of the bird's head has been fully developed, the eyes being represented by raised knobs along the sides of the long beak; the beaks are of various lengths, representing no doubt different forms of crested bird's heads; the angle of the head and stem is dependent on the natural growth of the tree.

SCREENS 7, 8, 9, 10, AND 11.

IMPLEMENTS FOR ACCELERATING THE FLIGHT OF THE DART, BOWS, CROSS-BOWS, QUIVERS.

Before entering upon this branch of the subject, it might perhaps have exemplified better the idea of sequence attempted in the arrangement of this collection had the shape of the room admitted of it, to have taken spears and

lances first as being more primitive weapons, but this is of less consequence, as it is impossible to establish amongst the implements of modern savages a perfectly true sequence: It is only in points of detail that absolute truth can be arrived at. In regard to the primary order of development, much must still be left open to conjecture. The straight stick pointed at the end, of which examples from Australia may be seen in this collection, affords the most primitive kind of spear. As with the club, so with the spear; the desire to throw it at the enemy before approaching within reach of his weapons, or to overtake game upon the move would lead to the use of the dart, or javelin, and by degrees contrivances for accelerating the force and range of the dart would be introduced. Of these the bow long preceded any historical record, but we have evidence even amongst modern savages of a state of culture anterior to the introduction of the bow. We must not be misled

No bow used.

by the absence of the bow in some of the southern parts of South America and parts of Africa, into supposing that this necessarily implies ignorance of this weapon, because it is probable that many nations have laid the bow aside on account of tactical and other reasons even before the introduction of fire-arms. In South America we know that the Moxos Indians have laid aside the bow, and the discovery of chert arrow heads, in places where the bow is not now employed, proves that it was used there formerly, but in cases where no bow is used, and darts are thrown by the hand, as amongst the Tapoyers of Brazil, mentioned by Nieuhoff in 1640, we may be fairly tempted to assume that the bow had not been discovered; yet this is not a sufficient proof in itself, because some nations of historic times are known to have used the javelin in preference, as did the Romans and Saxons. But in Australia we

Australian
throwing stick.

have an example of an entire continent occupied by a people whose arts are all of the most primitive kind, who have no knowledge of the bow, and who use another contrivance in place of it. The Wamera, or throwing stick of Australia, consists of a stick from one and a half to two feet in length, with a kind of hook or pin at the end; this pin is inserted into a hole at the butt end of the spear, and the throwing stick held in the right hand along the shaft of the spear; in throwing, the savage after letting go the spear with his finger, continues the impulse to the end of the spear by means of the point of the hook of the throwing stick, this implement having the effect of adding another joint to the arm of the

thrower. The throwing stick is now used only in distant and unconnected regions, viz. in Australia, amongst the Esquimaux of the Arctic regions of America, and amongst the Purus Purus and Conibo Indians of the western part of South America. It was used formerly by the Mexicans, and there is some reason for supposing that it was also used formerly by the Pelew Islanders. Nos. 198 to 212 are examples of the Australian wammera, showing the gradations from the simplest form of hooked stick to a kind of pointed oval plank resembling their shield for which it appears to be sometimes used as a substitute in parts of Australia. Nos. 213 and 214 are Esquimaux throwing sticks. No. 215 is a fac-simile of the *Palheta* or throwing stick of the Conibo Indians of South America. No. 216 is a fac-simile of that from Mexico, the use of which in that country was first noticed by Mr. Franks. All these resemble the Australian throwing stick in having a peg at the end to insert into a cavity at the end of the spear; but in the throwing stick of the Alleutian Isles this is reversed, and the end of the spear fits into a cavity of the throwing stick. The Mexican stick, like the Esquimaux, has a groove along its length, at the end of which the projecting peg is inserted. The stick of the Conibo Indians also resembles that of some of the Esquimaux ones in having a hole cut in the handle to receive the finger of the thrower. The stick of the Greenlander is somewhat differently formed, but on the same principle. The average range of a dart thrown from the hand without this contrivance appears to be from 30 to 40 yards. Du Chaillu says that the Fans of the Gaboon throw their iron-headed spears with effect from 20 to 30 yards. Denham and Clapperton, who saw the javelin used in action, say that men were killed by the Felatahs at 30 and 35 yards, and Thurnburg in 1772, says that the Hottentots can throw the assegai as far as 100 paces. John Williams the Missionary, in 1837 saw a Samoan Islander throw his dart through a ring four or five inches in diameter at 80 feet. With the wamera, Klemm gives an account of a wound several inches deep being caused by the Australian spear at 30 paces, and at 40 paces he says the natives are always sure of their mark, and even practice with effect up to 90 yards. Darwin, in his Naturalist's Voyage, also says that he saw a cap transfixed by means of a throwing stick at 30 yards. Rev. J. G. Wood says that the Australians can hit an object the size of a man four times out of six at 90 yards. I have myself seen the natives, when practising in Eng-

Distribution of the throwing stick.

South American throwing stick.

Esquimaux throwing stick.

Range of javelin thrown by hand.

Amentum.

land, range considerably upwards of 100 yards. Another means of accelerating the flight of the javelin is by means of the *Amentum* or *Ounep* as it is called by the Melanesian Islanders. This is a thong attached to the centre of the spear in which the forefinger is inserted, and like the throwing stick it enables the thrower to continue the impulse after the spear has left the hand, acting to some extent on the principle of the sling. The amentum was used by the Greeks and Romans, and is mentioned by Virgil, Ovid, Cicero, and other ancient writers, and is figured on some of the Etruscan vases; it was called *ἀμεντιον* by the Greeks and *Amentum* by the Romans. It appears to have consisted of a thong attached to the centre of gravity of the spear. Each spear had its amentum attached to it. No. 217 is a barbed iron javelin from Central Africa with this contrivance attached to it, and its use in these parts was no doubt derived from the Romans, Fig. 27. The *ounep* of the Melanesian Isles is an improvement on this; it is a loop about one foot in length tied in a knot at the other end, one end is fastened round the centre of the spear in a half hitch, and the other drawn tight by the forefinger, as long as the pressure of the forefinger is upon it it holds the spear, but when that is removed the hitch gives way and the spear is released, the *ounep* remaining in the hand of the thrower. This contrivance is used in New Guinea, New Caledonia, and Tanna, New Hebrides, where it is worn when not in use suspended from an armlet on the left arm. In New Guinea Capt. Cook saw it used; it was hurled at the party from a distance of 60 yards and passed considerably beyond them. The late Emperor of the French in order to test the efficiency of the amentum, caused javelins to be made for experiment of the exact size and weight of the Roman ones found in the ditches of the ancient earthworks at Alise-Sainte-Reine. It was ascertained that without the amentum the javelin thrown with the hand only ranged 30 metres; with the amentum the range was increased to 70 metres, showing that it was more than doubled by this means.

Range determined by experiment.

The question whether the throwing stick or the amentum was ever more widely distributed, so as to unite the distant regions in which it is now found, is open to conjecture. That the throwing stick is a more primitive weapon than the bow appears probable, both on account of its inferiority, its simplicity, and also from its being used to project the long spear. When the bow

was introduced it would, no doubt, rapidly supersede the throwing stick, which would be retained only in those places where the bow was unknown, or in the Arctic regions where the difficulty of obtaining suitable materials rendered the construction of a bow a work of difficulty. In tropical and temperate regions the elastic properties of wood and its applicability to the purposes of offence would force itself upon the notice of aboriginal man as he pushed his way through the underwood of the primeval forests, he would perceive that by tying his lance to the end of an elastic stem, and by a simple contrivance for retaining it in a bent position until the proper time arrived for releasing the spring, it might be made to pierce other animals as they passed through the wood; hence the spring trap, which we find widely distributed in parts of Africa and Southern Asia. The spring trap of the Malay peninsula, described by Père Bourienne, is a contrivance that might readily have suggested itself from the use of an elastic throwing stick. When the spring of such a trap is fastened down by a string or cord, it would soon be perceived that by attaching the end of the lance to the string instead of the stick, it could be made to project the lance with great force and accuracy; the bow would thus be introduced. The bow used by the Mincopies of the Andaman Isles, No. 237, bent only at one end and straight at the other, is such a bow as might have suggested itself in this manner. A similar form of bow bent more at one end than at the other is used in Mallicollo, New Hebrides, and in New Ireland, Nos. 238 and 239; there is a bow of the same form with a plaited string from Savage or Banks's Island in the Christy Collection, and the Japanese bow, Nos. 288, 289, and 290, is of somewhat similar construction.

Origin of the bow.

It has sometimes been assumed from the almost universal distribution of the bow, that it must have originated independently in many different localities; of this, however, we have no evidence, and considering the great antiquity of the weapon its distribution affords insufficient grounds for the argument. We shall see that it can be traced, with great probability, to some three or four centres even at the present time. In considering the subject it will be desirable to trace, first the distribution of the simplest form of bow formed of a single piece in one bend called in Latin *arcus*, from its resemblance to an arch. In North America this appears to be the bow of the southern and eastern parts only. Capt. John Smith in 1606 describes the bow of the Indians

Arcus or plain bow.

of Virginia as being of the same shape as our own, scraped into form with a shell; and in the account of the voyage for the relief of the colony in the year 1586 sent by Sir Walter Raleigh, they are said to be of wick-hazel. In South America this form of bow is used throughout all the northern parts as far south as the river Vermijo, only two tribes the Mataguaya and Tobas using it below that river. It re-appears in Tierra del Fuego in a diminished form, with a string of dried gut and flint-pointed arrows, but the interval occupied by the Patagonians, who do not now use the bow, is bridged over by the discovery by Lieut. Musters, R.N., about the Rio Negro, of flint arrow-heads (exhibited in a Glass Case, in the pre-historic series), of the form which is peculiar to the American continent, being found in ancient deposits throughout the United States, and differing slightly in form from those of Europe. Pigafetta also mentions (1519-22), a bow-using people in those regions. The bow of the northern part of South America used by the Arowaks, Botocudos, Maopityans, Muras, and others, is from six to seven feet long, Nos. 246, 247, the strings of twisted cotton and arrows about five feet in length pointed with cane or hard wood, Nos. 678, 679, 680, the feathers are set on spirally so as to give the arrow a rotatory motion, a practice which Mr. Lewis Morgan mentions to have prevailed amongst the Iroquois, and which is also used by the Shoshonees of North America, who however use smaller feathers. The arrows are of reed and have a fore shaft of harder wood, like those of the Polynesian Islands and New Guinea. The arrows of the Arowaks have no feathers according to Klemm, and correspond in this respect, as well as in their length and even in their ornamentation, to those of New Guinea. The Macusio and Wapisianas have shorter bows. The bow of the Chunchos of the Peruvian forests is four feet nine inches in length, and is peculiar for having on its front side a deep furrow cut down its length in which another arrow is inserted ready for action, and held with the bow in the left hand. This peculiarity they have in common with the bows of the Friendly Islands, Nos. 218 to 223, which are similarly constructed. Some of the bows from British Guiana, Nos. 248 to 251, have also a furrow at the back. It also appears probable, from the position in which the arrow is represented along the outside of the bow in Lord Kingsborough's Mexican Antiquities, that the bow was similarly constructed in Mexico.

The bow of the Papuan races of New Guinea is usually

6 or 7 feet long and frequently of bamboo or hard red wood; the string is of rattan, which is also the case in some parts of India. That of the Yenadies aborigines of the island of Strihureecottah, north of Madras, according to Dr. Shortt, is made of the fibres of the *Ficus indicus*. The New Guinea arrows are 4 or 5 feet long, like those of South America, with hard wood for shafts, similarly barbed or pointed with cane, sometimes similarly ornamented with curlew feathers, like those of the Arowaks, No 351. Their resemblance to the Australian lances, both in length and form will be noticed, and the significance of this will be borne in mind when it is considered that both here and in South America the long arrow is used in the immediate vicinity of races to whom the bow is unknown, and who use the throwing stick for projecting the lance. Whether the bow originated in New Guinea or was received from the north, together with other customs, such as building on piles, the use of cylindrical cane bellows, and other appliances in use by the Malays, it may be difficult to determine; but there is evidence that it spread from this neighbourhood to the surrounding islands. The use of the bow does not correspond to the distribution of races; it is not or was not formerly used by the New Caledonians, who are of the same Papuan race as the inhabitants of New Guinea. Nor has it reached the New Zealanders, beyond them, who are a mixture of Papuans and Polynesians; or the Tasmanians, who were Papuans. Nor is it known in any part of the great continent of Australia, except in the extreme north, which is in contact with New Guinea, where they use a bow of the same size as that of New Guinea, and, like them, having a string of rattan. To the north of New Guinea the Malays are acquainted with the use of it, but do not habitually use it in war. It is not mentioned amongst the Bujis of Borneo, and Dampier says that the Japanese are very inexperienced with it, seldom succeeding in throwing the arrow above a dozen yards. Turning now to the Pacific Islands, on the east we have clear evidence, derived from language, of its having spread from a single and probably a Malayan source. It is used in all the islands of the New Hebrides, Nguna, Nukapu, Aurora, and Espirito Santo. Turner, in his *Missionary Voyages*, gives the name for the bow throughout the Pacific. The Malayan word for it, according to Marsden's dictionary, is *Pannah*; in Britannia Island, Loyalty Group, inhabited by Papuans it is *Pena*; in Chabrol Island, Loyalty Group, where the inhabitants are also Papuans, it is *Pena*; in Sandwich Island, New Hebrides, also Papuan, it

Spread of the
bow traced by
language.

is *Fana*; in Eromanea, New Hebrides (Papuan), it is *Li Fana*; in Tanna, New Hebrides, Papuan, *Fana*; in Aneiteum, New Hebrides (Papuan), it is *Ince Nefana*. The persistency of this name, it being a foreign and Malayan word, throughout these Papuan islands, so remarkable for their changing dialects, is remarkable. Passing now to the islands inhabited by the Polynesian race, we find in the Friendly Islands, *Kaufana*; in Savage Island, *Kaufana*; in Samoa, Navigator's Isles, *Aufana*; in Tahiti, Society Isles, *Fana*; and in Marquesas, on the extreme east of the Pacific, *Pana*. In the last two instances, viz., Savage Island and Aneiteum, New Hebrides, the word for arrow is the same as for bow, being *Fana*, showing that both must have been introduced at the same time, and in no country is the word for arrow the same as that used for spear, which it would have been had it been independently invented, as a means of projecting the spear or dart. Amongst the Papuan Islands the bow is used as a war weapon, but amongst the Polynesian islands, to the eastward of Fiji and the Friendly Isles, it is used only for amusement, as a trial of strength, or for killing rats. As already mentioned, the bow of the Friendly Isles, like that of the Chunchos of South America, has a furrow along its length to receive another arrow. Whether this implies connexion or not may be doubted, but it is perhaps worthy of notice that the name for bow in Brazil, given by Neuhoﬀ, is *Gura Para* and *Vira Para*, words closely allied to the *Pana* of Polynesia. In the Navigator's Isles the name for arrow is *U*, and in Vate, New Hebrides, *Us*; and the Brazilian name, given by Neuhoﬀ, is *Uba*; but too much reliance must not be placed on the coincidence of names when the distribution is not continuous. We see from this that the line dividing the bow-using people on the north from those who have no knowledge of it in the Pacific, is well defined, running from the Indian Ocean below Java on the west, cutting off the extreme northern fringe of Australia adjoining New Guinea below Torres Straits, and passing between the Loyalty Group and New Caledonia, from thence running eastward, along the 23d or 24th parallels of south latitude, across the Pacific.

Division between bow-using and non bow-using people.

The plain bow is used by the Ainos of the Kurile Isles, by the Mishmees, and other inhabitants of Assam, Nos. 252, 253, by the Bhootanese, Mincopies, of the Andaman Isles, and the aborigines of the Deccan of India; but Dr. Shortt mentions the Chenchos as a people in Central India, who throw the dart with the hand. The majority of the bows of the Deccan of India appear to be shorter than those of the Papuans,

and are frequently pointed with a piece of cane bound on inside to give substance to the handle, like those of Assam. No. 259 is from Northern India, and has a string of rattan. The bows of the Casseyah of the mountains of Bengal is of bamboo with a string of cane. The bow of the Veddas, of Ceylon, is from 5 ft. 8 in. to 6 ft. 6 in. in length, and exceedingly strong; the string is of bark fibre twisted. Throughout the continent of Africa the plain bow is used. The Caffres of the south-east do not use it now, but Duarte Barbosa says that they used it in the neighbourhood of Sofala in 1514, and that they were of medium size, and the iron points of their arrows very large. The Bushman's bow is about 2 feet in length and an inch thick in the centre, of iron or olive wood. They can be used with effect at 100 yards, and will range as far as 280 paces. Barth says that the bow is rarely used by the Bagirmi and the negro tribes to the south of Lake Tchad. Amongst the Bagirmi, the name for bow is *Kakese*, and that of the arrow *Kese*. Herodotus speaks of the Æthiopian bow as being 4 cubits long, a little more than 6 feet. According to Bosman it was not much used on the Gold Coast in 1700. The bow is used by the Tibboos, Bornouese, the Hausa, the Felatah, the Wazaramo, the Madi, the Unyamuezi, and the Wanyambo; and Barth says the Kelgeres, Kelowi, and Fulbe use it on horseback, like the Assyrians; the women of the Waluta, like those of the Fiji Islands, use the bow. The Madi of East Africa use bamboo bows. Grant says it is unknown to the Wanioro, whilst their neighbours of Karague use a bow 6 feet 3 inches long, bent only at the ends, like those of the Egyptian sculptures. Those of the Dor tribe of the White Nile, Nos. 240 to 242, are of exactly the same form, and in the work of Denham and Clapperton, an illustration is given of the Munga bow, which resembles another form of Egyptian bow, bent inwards at the centre, but like all the African bows constructed of one piece. A bow of a similar form to this is used by the Shoshones of North America, but is a composite bow of horn and wood, as we shall see hereafter. The plain bow was the weapon of Western Europe; it was but little used by the Romans, who employed Cretan and other auxiliaries for the purpose. It was not considered an important weapon by the Franks or Saxons; but Tacitus speaks of the effective force of the German bowmen. The bow was introduced into England as a weapon of war by the Normans, and became the chief weapon of this country until the time of Elizabeth, when it was superseded by fire-arms. The English long bow was of various kinds of wood, but chiefly of yew, of one piece,

Range and
accuracy.

about 6 feet or 6 feet 6 inches in length. According to Sir John Smyth, who is confirmed by Barrett, it was habitually used in action at from 160 to 220 yards, 240 yards being the greatest range at which it could be used with effect; but the extreme range extended to 440 yards. In the butts in Finsbury Fields in 1498, persons of 24 years of age and upwards were compelled to shoot at a mark 220 yards distant, and the general practice was from 160 to 420 yards. One remarkable case is mentioned of a man having shot a mile in three ranges, *i.e.* three ranges of 587 yards. This shows the bow to have been a much more effective weapon in the hands of the English than in those of savages. We learn from Elis's Polynesian Researches that in Tahiti they use a bow 5 feet long and one inch and a quarter thick in the centre, with an arrow 3 feet long and pointed with hard wood without feathers, using it for range in their games as a trial of strength, and that the utmost range attained is 300 yards. Grant gives the range of the 6 feet 3 inch bow of the Sultan of Karague at from 150 to 200 yards when fired with elevation for range; and Capt. John Smith, in 1606, states the effective range of the bow of the Indians of Virginia to be 40 yards, and the greatest range 120 yards. The penetration of the English bow may be estimated by an account of an experiment given by King Edward VI. in his journal, in which he says that 100 archers of his guard shot at an inch plank of well seasoned timber (distance not given, but probably at short range), and that many of the arrows passed quite through and stuck in another plank beyond. Although discontinued for general use in the time of Elizabeth, it was used by the Highland clans as late as the middle of the 17th century; and the name of archer was applied to the warders of a fortress for a considerable time after the weapon had ceased to be used, in the same manner that the term javelin men is retained by sheriffs' men at the present time. Philip II. of Spain had a body guard of archers in 1567. The French never excelled in the use of it, but the employment of particular weapons cannot be attributed in any degree to national peculiarities, being usually the result of inherited custom. Speke says that in East Africa the use of the bow is not in any way a test of racial qualities, the bravest and strongest use it, whilst the weakest often rely on the use of the spear.

I have hitherto spoken only of the plain bow or *Arcus*, and I have shown that in describing the weapon we have ranged chiefly over the central and southern parts of the globe, where suitable elastic wood for the purpose is

abundant; but in the frigid regions to the north there are large tracts in Europe, Asia, and America, which are either totally destitute of trees or covered with coniferous forests, yielding few if any woods that have sufficient spring for the construction of a bow; and there is reason to believe from the traces of forests discovered at low levels beneath the soil in various places that this inhospitable region extended more to the southward in ancient pre-historic times. In such a region it is unlikely that the invention of the bow should have taken place, and when the knowledge of it was communicated to the inhabitants from elsewhere it would be necessary either to employ some other elastic material or to unite the stiff pine wood to some other elastic substance, in order to give it the necessary spring. Of these the horns of animals afforded the best material. The earliest record of the bow is that of Pandarus, which is described by Homer as being made of the horn of the mountain goat, but as the complete horn would not have the necessary elasticity it is improbable that the use of the bow should have suggested itself in this way to anyone who had not previously been acquainted with the wooden bow. The horn must have been cut in order to make it available for this purpose, though it probably retained the original form as it grew upon the head of the animal. It is from the horns of the mountain sheep that the Blackfeet and Oregon Indians of North America construct their bows, by uniting the two horns with glue and sinew in the centre, and the shape is not unlike that of the Greek bow,—a double arch or Cupid's bow. This form was used by the Parthians, and the Daci on Trajan's column are represented using it against the Romans. Although the Romans never made much use of the bow, they appear to have sometimes adopted this form, and it was copied in steel in Italy as lately as the 15th and 16th centuries. It somewhat resembles in form the ancient Egyptian bow and that used by the Munga tribe of negroes already mentioned, but these are of wood. We have no means of ascertaining the exact locality in which this form originated, but its use in the west appears to have been confined to the region surrounding the Black Sea.* Theocritus and Lycophron distinguish between this bow and that of the Scythians, which resembled the form of a C in its backward curve when unstrung. This is the

* Since writing this the appearance of Mr. Isaac Taylor's work, in which he connects the Etruscans and the Egyptians with the Ugrians of Northern Asia, appears to be worthy of note in relation to the presence of this undoubtedly northern form of bow in Egypt and Italy.

composite bow of the north, the origin and distribution of which we will now proceed to consider. In the Polar regions of America, where nothing but drift-wood is obtainable, the Esquimaux are often compelled to form their bows of several pieces of wood or bone, fastened together, Nos. 268 to 275, Fig. 28; and in order to give it elasticity they bound on to the back a strong cord of reindeer's sinew. This custom of employing sinew to give elasticity to the bow has been traced by Sir Edward Belcher, a close observer of the customs of the natives whom he visited, over the whole of the northern region of the globe, from Norway and Lapland across Northern Asia and the Polar regions of America into Greenland. If, as appears probable from the circumstance of an Arctic climate and fauna having extended much further south in pre-historic times than at present, the region of coniferous forests also extended further south, together with a race of men resembling the Esquimaux in their arts and implements, as appears to be in a measure proved by the discoveries in the French caves,—then we may assume it to be extremely probable that they used the Esquimaux bow, or a composite bow constructed on a similar principle. The Tartar, Scythian, Turkish, and Persian bows of modern times are but improved and more highly finished varieties of the same weapon, neatly bound round so as to conceal the sinews and joints. In Lapland the bow is of the same form, of two pieces of wood covered with bark, like the Chinese bow, and it is held horizontally like the Esquimaux bow. Richard Chancelour says that the Russians at the time of Edward VI., 1554, used the same bow as the Turks, which was the composite bow. The Dacians, as already mentioned, are represented using the Greek bow, which is of an allied form, though constructed of one substance, viz., horn. The form of the Scythian and Mæotian bow is represented on a fictile vase in Hamilton's Etruscan antiquities, which shows it to be of precisely the same shape as the modern Tartar and Persian bows, Nos. 280 to 284. The Massagetæ of Central Asia are described by Herodotus as being equipped in the same manner as the Scythians, whom they resembled in their nomadic habits and in their use of bronze for weapons. In their wars with the Persians they must have introduced their bow into Persia, for we do not find that form represented in the Assyrian sculptures; but we also learn from Herodotus that Cyaxeres, king of the Medes, sent men to the Scythians to learn the use of the bow, and so completely did the bow become a Persian weapon that in the time of Darius an archer was stamped on the Persian coins as a national emblem, and the bow was

retained in its original form until superseded by fire-arms. In an account of the "Manner of Living of the Persians," in Pemberton's collection of travels, it is said to be "of wood and horn, painted and varnished, and made as fine as possible." In 1514 Duarte Barbosa mentions the "Turkish bow," at Ormuz, at the mouth of the Persian Gulf, and says that it was made of "buffalo's horn and stiff wood, painted and gilded." He also speaks of the same "Turkish bow" being used by the Moors at Guzerat in the kingdom of Cambay; and he expressly says that the white people in the Deccan use this bow, whilst the black people, who are the aborigines of the country, used the long bow, "of the same form as the English bow." This clearly proves the introduction of the composite bow into India from the north. The same form is now used in India of steel, Nos. 283 and 286, although of course the particular backward curve is no longer necessary in bows of that material, as may be seen by an English example of the plain bow copied in steel, No. 287, it is an example of survival of form after the use for it has ceased. In China the Kung bow, No. 286, Fig. 29, is not the original bow of the country, but was introduced by the Tartars; its form is precisely that of India and Scythia, except that the straight curved-back ends more nearly resemble the Esquimaux bow and that of India than the modern Persian or ancient Scythian form. It is of horn and wood combined, and is strung by bending it between the legs like the Esquimaux bow. Its strength is estimated by the number of catties of $1\frac{1}{2}$ lb. each required to draw it. Flemming, in his "Travels in Mantschu Tartary," speaks of bows of 40, 60, and 70 catties. The Chinese, like the Greeks, attribute the origin of the bow to a deity. From China the use of this bow extends northward to the Tschutschi. Pallas describes the Tungusians, who use this bow, and in swimming a river tie it to their pigtails to keep it out of the water. It is also used by the Kamschatdales and Samoides. From the Tschutschi in the north-east of Asia it extends across Behring Strait, and then the area over which it ranges divides running down the west coast of North America as far as California, and along the north coast and islands occupied by the Esquimaux race as far as Greenland. Throughout this region we have the clearest evidence of connexion and gradual variation, as it becomes more distant from the source from which it was derived. Captain Beechey, in 1826, says that at St. Laurence Island, south of Behring Strait, all the implements of the inhabitants are like those of the Esquimaux, "except that the

" bow approaches more nearly to the form of that of the " Tschutschi." At Kotzebue Sound, on the American coast of Behring Strait, he says that the bows are different from those of St. Laurence Island in being more slender; but they are made on the same principle from drift pine, assisted with thongs of hide, and occasionally with pieces of whalebone placed at the back and neatly bound with small cord; the arrows are tipped with flint and iron. Between Icy Cape and Point Barrow they are described as being the same, except that they are better made and with whalebone. Sir Edward Belcher says, in a paper read before the Ethnological Society, that he always considered that the Esquimaux in the construction of their bow had the Tartar form in view, which they imitated as closely as their materials enabled them. The bows of the Western Esquimaux are better made than those to the eastward. Having a good supply of drift-wood in the west, it is not necessary to piece them, but they are bent into form by steaming them over a fire. At Melville Peninsula, where the materials are more scarce, they are made of the horns of the musk ox, and thinned horns of the reindeer, strengthened by sinew in the usual way. According to Dr. King there are two varieties at Hudson's Straits, one being of the form of the arch, Nos. 269 and 270, and the other with the ends curved back like those of the Western Esquimaux. In Frobisher's Straits, Martin Frobisher describes them as being of similar construction, strengthened with sinew; and Crantz gives an account of those of the Greenlanders, which are of fir, whalebone, and sinew, like the other Esquimaux. Nor is the use of this particular sort of bow the only custom which has spread over this region from the continent of Asia; the peculiar custom of shaving the crown of the head, which is practised by the Tschutschi, may be traced, with some breaks, throughout the region occupied by the Esquimaux. Following the other branch of the distribution of the bow downward along the west coast from Behring Strait we find similar varieties of form occurring as we proceed southward from the point of departure. In 1792 Vancouver describes the bows of Nootka Sound and Port Discovery, which are like those of the Esquimaux, curved back and strengthened with hide, "so that when strung the concave side becomes the convex side." No. 276, from this locality, though not strengthened with sinew is of exactly the same form as the Tartar and Chinese bow. From an illustration given in Hind's Canadian Exploring Expedition, it appears that the bows of the Sioux Indians somewhat resemble those of

the Esquimaux, and are carried in similar bow-cases attached to the quivers. Burton says the bows of the Sioux and the Yutas are of horn, with a strip of raw hide at the back to increase the elasticity. Catlin says that the bows of the Blackfeet are made of the horn of the mountain sheep. The bows of the Shoshones in the Rocky Mountains south of lat. 43°, as described by Schoolcraft, are two feet ten inches long, of horn and wood, the horn brought into shape by wetting and heating, like the Esquimaux practice, and it has a curve backwards when unstrung; that of the Origen Indians is 30 to 40 inches long, of horn, cedar, and sinew. Like the Scythian, the North American Indian uses the bow on horseback. Captain Beechey says the bow of the Californian Indians, in the neighbourhood of Monterey bay, the round Tartar-like skull of which race is seen in the glass case, No. 11, resembles the Esquimaux bow, but instead of having a strong cord of sinew at the back, the sinew is spread over the whole back of the wood, and embraces the ends so "as to curve the bow backwards." They are also used by the Modoc Indians. No. 279 is a Californian bow with flint-pointed arrows, obtained by Sir Edward Belcher, who says that this form of bow extends as far south as the 36° parallel of latitude. I have, however, some reason to believe that it is occasionally used even as far south as Peru. The Peruvians, like the inhabitants of the north-west coast of America, had the practice of flattening their heads, and this custom we have now reason to suppose was a Tartar custom, and is found in graves in the neighbourhood of the Black Sea, thus showing an area of distribution somewhat similar to that of the composite bow. With respect to the range and capacity of the composite bow, it does not appear, by any evidence that I can obtain, to be in any way superior to the plain bow, but rather the reverse; and this is another argument for believing it to have been introduced from necessity, on account of the absence of suitable wood, rather than as an improvement upon the plain bow. Sir Edward Belcher, in his description of the Esquimaux bow, says:—"The range obtained by measurements, when shot by one of the most powerful of the tribe, was 176 yards." This was also the extreme range obtained by any of the bows between California and Icy Cape. The Esquimaux practice at a mark, and are good shots at short ranges. Captain Beechey says that he saw extraordinary performances as regards accuracy. At Chamisso Island, amongst others, he saw one of them put his arrow through the two eyes of a diver at 30 yards. In

Range and
accuracy.

a skirmish with the natives it was found that at 100 yards a flesh wound was produced which disabled a man for a time, and at 10 yards the right arm of a marine was pinned to his side by an arrow shot from one of their bows, and another buried itself $2\frac{1}{2}$ inches under the scalp of a sailor. Klemm also says that at 20 yards the Esquimaux shoot with great dexterity, but at greater distances their bows are not reliable. The relative strength of the composite and plain bow may, perhaps, be judged of to some extent by the account which Herodotus gives of the bow, which the King of Ethiopia sent to Cambyzes, after he had conquered Egypt, as a challenge, and which only one man amongst the Persians was able to draw. The Ethiopian bow was 4 cubits long, and a plain bow of the usual African construction.

From the foregoing remarks we see that there is every reason to believe that the composite bow has spread from a common centre somewhere in Central or Northern Asia. Being a more complex form it can be more easily traced by its varieties than the plain bow, which being simpler is most probably an earlier form of the same weapon. The varieties of the plain bow are chiefly due to the different materials of which it is composed in different countries. It can be traced, as we have seen, to some two or three centres, but whether it originated independently in those centres or was derived from a still earlier source, does not admit of more than a conjecture. The distribution of these two principal classes of bow is shown in the small map attached to the screen in which the area of the composite bow is coloured red and that of the plain bow blue.

Amongst the bows which have not yet been described is the angular bow of the Assyrians and Egyptians. It is difficult to place such a singular and apparently inefficient weapon in its proper sequence; its use does not appear to have extended beyond the two countries above named. Bows for projecting stones and clay pellets are used by the Afghans, and in other parts of India. One from Odeypore, called *Goolet*, is in the Indian Museum; also in Assam, Nos. 254 to 257, and in South America, amongst the Guaranies, Abipones, and a few Brazilian races, who knock down birds with it at 30 or 40 paces, with a pellet of clay 1 inch in diameter. In some countries the bow is drawn with the aid of the feet, thereby obtaining greater purchase upon the weapon. This is the case amongst the Gran-Chaco Indians of South America, amongst the Laplanders, and the Veddahs of Ceylon; and this practice might, perhaps, have given rise to the use of the cross-bow, if that weapon had

not, in all probability, been suggested by the use of the spring trap.

SCREEN II.

CROSS-BOWS.

The cross-bow is used in China, No. 300, where it is made with a kind of reservoir of arrows, resting one above the other over the lever which draws the string, and which, by an ingenious contrivance, is made to discharge each arrow in two motions, replacing it by another, until the whole are expended, by which means a continuous discharge is obtained. Commissary-General De Fonblanque mentions the cross-bow in Japan. Symmes speaks of it in Burmah in 1795. Mouhot says it is the only weapon used by the Stiens of Cambodia, but they never practise with it at a greater distance than 20 paces. It is used in Assam, where its form clearly shows it to be derived from the common bow, it being in fact, nothing but one of these ordinary bows, with a shaft attached at right angles to the centre. The trigger is of two kinds, one a simple lever to raise the string from the notch, the other the same lever with a pivot attached to it, Nos. 296 to 298. A cross-bow of precisely similar construction is used by the Kairens on the Martaban coast in Pegu, as appears by a specimen in the Belfast Museum. From hence it appears to have spread into the Nicobar Islands. I am not aware that it is used in India. It is unknown in East Africa, but Grant speaks of the children at Ukuni making little models of guns out of cane and toy cross bows. It is not found again until we come to the Fans of the Gaboon, in West Africa, Nos. 291 and 292. Here, however, the weapon shows no signs of having been derived from the bow of the country, and the square section of the short bow of the implement suggests the possibility of its having been copied from the metal cross-bows of Europe at some former period. The method of releasing the string from the notch is, however, totally unlike anything that is to be seen in Europe, except perhaps amongst toy cross-bows. The shaft is split in two pieces horizontally, throughout nearly its entire length from the butt end to near the bow; to the under piece a peg is attached, which passes through a hole in the upper piece just under the notch, which contains the string, when the two pieces of the shaft are squeezed together by the hand, the peg pushes the string out of the notch and

Cross-bow
traps.

discharges the arrow. In order to string the cross-bow they are obliged to apply their feet to it. They use with it small poisoned arrows, feathered with bark, which are so light that to prevent their being blown away by the wind before firing, they stick them to the groove of the shaft with a piece of gum, a practise which resembles that of the inhabitants of Tahiti, who having no notch to their arrows, use a piece of gum to make the end of it adhere to the string whilst firing. The cross-bow is also used on the coast of the Bight of Benin, as appears by a specimen in the Scarborough Museum, in which the construction of the trigger is exactly similar to that of the Fans. No. 294, Fig. 30, is a rat trap, constructed on the principal of the cross-bow, from the Bornonese territory, Central Africa; the animal in drawing the bait releases the spring and is transfixed by the arrow. The negroes have carried this contrivance with them into the New World. No. 295 is a similar trap, made by the negroes in Jamaica, Fig. 31. The Tshutschi of North-eastern Asia and the Ainos of the Kurile Isles make use of a somewhat similar cross-bow trap which differs only in that the arrow has a cross bar which squeezes instead of piercing the animal.

The Tormentum or Catapult was a large engine of war, a model of which may be seen on the north wall, used by the Greeks and Romans to project darts. There appears to be no evidence of its having been used continuously up to the time when the hand cross-bow came into general use in Europe, but according to M. Rodios, who is quoted by Demmin, a hand arbalest was used by the Greeks, and it seems unlikely the knowledge of this form of weapon should have entirely disappeared. It was used in Europe in the 10th and 11th centuries, and Demmin figures a cross-bow taken from an Anglo-Saxon miniature of the 11th century, in the British Museum. It was introduced into general use in England by Richard Cœur de Lion, but never became a national weapon in this country, being inferior to the long bow both in point of range and rapidity of fire. Sir John Smith says that the cross-bow would only kill point blank at 40 or 60 yards, and with elevation at six, seven, or eight score yards. The bowman could shoot 12 times to the cross-bowman's three shots, and six shots to one of the musketeer. The cross-bow also became useless when the string was wet, and it was to this cause that the French attributed the loss of the battle of Crecy, 1346, the Genoese cross-bows having become unserviceable on account of the rain. The rapidity with which the bow can be used by other hands

than English has also attracted the notice of travellers. Burton says the Sioux can discharge nine arrows before the first has fallen to the ground, and he compares their fire to the shooting of a revolver, and this is to some extent confirmed by Schoolcraft.

QUIVERS.

Quivers for arrows are of various materials, bamboo, skins, wicker-work, velvet, and other materials being used for the purpose; and the uses they serve do not admit of much variety by which to trace connexion. In the region of the composite bow of the north, however, we find varieties corresponding to those which have been traced in the distribution of the bow itself, the efficiency of which depends in a great measure upon its being kept dry, otherwise the sinew of which it is composed would relax, and render it useless. Bow cases are, therefore, made of the same material as those for the arrows, and they are usually attached together. Quivers and bow cases of this kind may be seen in their simplest form amongst the Esquimaux, (No. 275), and amongst the Indians of the north-west coast of America; and in a more finished state amongst the Chinese, Tartars, Turks, Circassians, Kighiz, Russians, and others in this region. And we may here notice a remarkable instance of the manner in which the implements of modern savages may be made to explain the construction of those of the people of antiquity described upon their sculptures. Mr. Rawlinson, in his *Five Great Monarchies*, gives an illustration of an Assyrian quiver (shown with others in a drawing attached to the screen), Fig. 32. It had an ornamental rod attached to it, which projected beyond the arrows and terminated in a pomegranate blossom or other similar carving. To this rod were attached the rings which received the strap by which it was suspended to the shoulders; the learned author adds, "it is uncertain whether the material of the quivers was wood or metal." No. 328, an Esquimaux quiver, having a rod attached to it in a similar manner, ornamented at the end with an animal's head, and to which the strap is attached, clearly explains the material of which the Assyrian quivers were made; the rod is for the purpose of keeping the limp skin quiver stiff and straight, and thereby enabling the bowman to draw out his arrows with the necessary rapidity. This is confirmed by the fact that no Assyrian quivers have been found in the excavations. In the quivers of the Califor-

nian and Oregon Indians, illustrated in Schoolcraft (*see* drawing on screen), Fig. 33, the rod extends beyond the arrows exactly like the rod of the Assyrian quiver, and is probably intended to guard the feathers from injury.

SCREEN 7.

SOUTH WALL.

AUSTRALIAN WUMMERAH OR THROWING STICK.

198. WUMMERAH, of the simplest form, being simply a stick with a hook at the end, the point of which is inserted into a cavity at the end of the long thin spear; the part of the stick which is next to the spear, when shipped, is slightly flattened.
199. The same form, with a flattened swell in the centre; the pin at the end fixed on with gum.
- 200 to 202. WUMMERAHS, with a flat expanding end where it is held in the hand resembling a crow-bar in form.
- 203 to 205. WUMMERAHS, with a deep concave notch on each side of the handle. Some of them have a large ball at the handle end to balance the weapon.
- 206 to 212. THROWING STICKS of the form called *Nevio*. Western Australia. Showing a gradual expansion of the blade until it reaches the breadth of one of the shields, for which it is sometimes used as a substitute.

ESQUIMAUX THROWING STICK.

213. ESQUIMAUX THROWING STICK, with cavities cut in the handle for the fingers so as to fit the hand; a custom prevailing to a great extent amongst people in an early stage of culture.
214. ESQUIMAUX THROWING STICK from Icy Cape, obtained by Sir Edward Belcher.

AMERICAN THROWING STICK.

215. Fac-simile of THROWING STICK of the Conibo Indians of South America, with a pin at the end bound on like the Australian specimens; it is also used amongst the Purus Purus Indians, with whom it is called *Palheta*. The original is in the Christy collection.

216. Fac-simile of a Mexican THROWING STICK, the original of which is in the Christy collection, and is ornamented with carving on the convex side; the pin is carved on the end of the concave side.

The last two numbers will be added to the collection hereafter.

AMENTUM.

217. Barbed iron-headed JAVELIN, furnished with an amentum after the Roman fashion. From Central Africa. Fig. 27.

SCREEN 8.

PLAIN BOWS.

ASIATIC AND PACIFIC ISLANDS.

- 218 to 223. Bows. Friendly Isles. Having a groove more or less clearly developed throughout the length on the outside with curved ends to receive the string.

- 223A. Bow. Friendly Isles. With concave back string secured with gum, two lines along the inside of bow.

224. Bow. Solomon Isles.

225. Star of Bows and painted ARROWS. Solomon Isles (On the ceiling.)

226. BAMBOO BOW. Darnley Isles, Torres Straits.

227. BAMBOO BOW and ARROWS, with wrist guard of cane. New Guinea.

Guards to protect the wrist are used by the Esquimaux, consisting of a small oblong piece of ivory bound on to the wrist, an example of which may be seen amongst the bone implements in the collection; similar ones of stone were used in pre-historic times, and are also shown in the cases of stone implements. They were also used with the English bow.

228. BAMBOO BOW. Probably from the same neighbourhood as the above.

229. BAMBOO BOW and bone-pointed ARROWS. New Hebrides. Obtained by Sir E. Belcher.

230. BOW and ARROWS. Eromango, New Hebrides. Obtained by Sir E. Belcher.

231. Bow. Probably New Hebrides.

232. BOW and ARROWS feathered with palm leaf, New Guinea, like those from Solomon Islands, Assam, and West Africa, New Guinea. Obtained by Sir E. Belcher.

- 233 to 236. Bows with strings of rattan. New Guinea.

237. Bow with string. Andaman Islands. With unequal bend.
238. Bow, with unequal bend, of nearly the same form as the last. Probably New Zealand.
239. Bow, of the same form, with unequal bend. New Hebrides or New Ireland.

AFRICA.

- 240 to 242. Three Bows, bent at the ends only, like the ancient Egyptian. Dor tribe, Central Africa. Obtained by Petherick.
- 243 to 245. Three Bows. Central Africa.
- 245A. Ashantee Bow, bound with leather and gold and silver bands, with a string of silver plate. Obtained by the troops in 1874.

SOUTH AMERICA.

246. LONG BOW. Demerara.
247. BOW. Probably Brazil.
- 248 to 251. Bows. British Guiana. With a groove along the outside like those of the Friendly Islands.

INDIA AND ASSAM.

252. Bow. Digaroo Mishmees, Assam.
253. BOW. Probably Assam.
- 254, 255. PELLET BOWS. Assam.
- 256, 257. PELLET BOWS. India.
258. PELLET BOW, with cane strings, and agate cups in the centre of the string to hold the pellet. India.
259. Painted Bow, with string of rattan, and an iron point at one end to serve as a spear as well. Northern India.
260. Painted Bow. Northern India.
- 261, 262. Painted Bows. Ceylon.

NORTH AMERICA.

- 263 to 265. Flat wood Bows. Clapet Indians, North-west coast of America.
266. Wooden Bow, curved at the ends with bone pointed arrows. Oregon Indians.
267. Bow with guard and six iron-pointed arrows with ogee blades. Believed to be from the North-west Coast of America.

SCREEN 9.

SOUTH WALL.

COMPOSITE BOWS.

268. Bow, strengthened at back with a strong cord of sinews, and three bone-pointed arrows. Alleutian isles.
- 269, 270. Esquimaux Bows, made of joined pieces of walrus ivory strengthened with sinews, with bone and iron-pointed arrows. Eastern Esquimaux.
- 271 to 273. Esquimaux Bows, strengthened with sinews at back; the ends turned back in imitation of the Tartar form. Unstrung. Western Esquimaux. One with bow case. Fig. 28.
274. Esquimaux Bow, strengthened at back with a piece of whalebone and a strong cord of sinews. Strung. Obtained by Sir Edward Belcher.
275. Esquimaux Bow. Strung. In case. With guard and five bone-pointed arrows.
276. BAMBOO Bow of Tartar form, the ends turned back. North-west Coast of America.
277. Bow, strengthened with sinews at back, the ends not turned back. North-west Coast of America. Unstrung.
278. Bow, of the same form and construction. North-west Coast of America. Unstrung.
279. Bow, of the same form and construction, unstrung, with five arrows having obsidian points. Californian Indians. Obtained by Sir Edward Belcher.

SCREEN 10.

SOUTH WALL.

280. Chinese composite Bow, of similar form to No. 276, Fig. 29.
- 281, 282. Indian Bows, of similar form.
283. Indian Steel Bow, of similar form.
284. Persian Bow, of similar construction, unstrung, with string attached.
285. Bow, of similar form to No. 284, composed of two pieces of wood made to join with a socket in the centre. Probably from Lapland.

286. Indian Steel Bow, of similar form to No. 283, with pistol attached to handle.
287. European Steel Bow, of somewhat similar construction to No. 283; the ends slightly turned back.

JAPANESE BOWS.

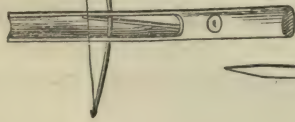
288. Japanese Long Bow, of irregular form, more bent at one end than the other. Somewhat resembling Nos. 237, 238, 239.
289. Japanese Bow, of the same form, shorter.
290. Japanese Toy Bow, with six arrows in case.

SCREEN 11.

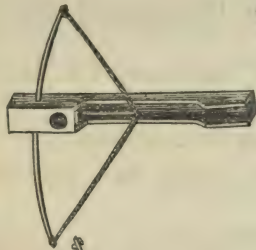
CROSS-BOWS.

- 291, 292. Two CROSS-BOWS. Fan Negroes, Gaboon, West Africa.
293. QUIVER and POISONED ARROWS of the above, feathered with leaf, like those from New Guinea and Assam.
294. CROSS-BOW, rat-trap, from the Bornonese territory, Central Africa. Fig. 30.
295. CROSS-BOW, rat-trap, of similar construction. Jamaica. Fig. 31.
- 296 to 298. CROSS-BOWS. Assam.
299. QUIVER of ditto, containing bone-pointed arrows and feathers of leaf.
300. Chinese CROSS-BOW with machinery for continuous discharge.
301. Chinese WHISTLING ARROW for cross-bow.
302. Genoese CROSS-BOW with stirrup and moulinet or windlass for stringing it.
- 303 to 307. BOLTS for Genoese Cross-bow.
308. LATCH. Time of Henry VII.
309. Ditto do.
310. Windlass for stringing the latch. Time of Henry VIII.
311. PIED DE CHÈVRE; on goat's foot, a lever for stringing the cross-bow.
312. PROD. Time of James I.

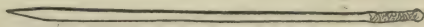
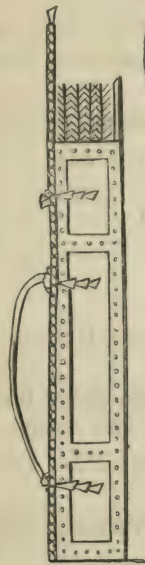
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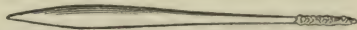
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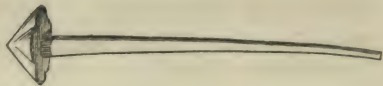
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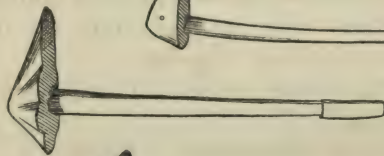
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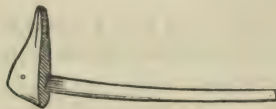
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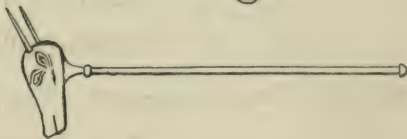
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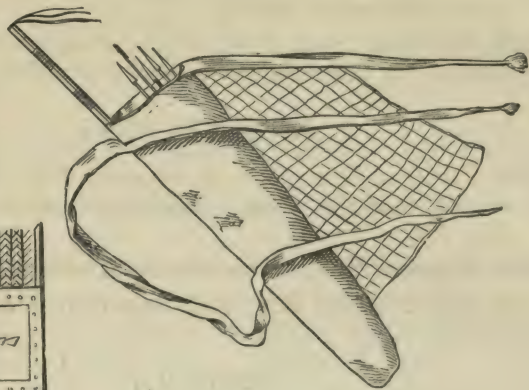
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40



41



33

PLATE III.



313. PROD. Time of Charles II.
 314. Modern English CROSS-BOW.
 315. A BOLT made of quills, and iron pointed. Locality not known. A similar one is in the Chichester Museum.

QUIVERS FOR ARROWS.

- 316, 317. Two blunt-pointed long ARROWS. Alleutian Isles.
 318. White leather QUIVER, containing 34 short barbed iron-headed arrows. Interior of North-west Africa.
 319. Indian QUIVER, broken, containing 29 arrows, some of which are exhibited under "Ornamental Art."
 320. Leather QUIVER. Dor tribe, Central Africa.
 321. Leather QUIVER, containing 16 short barbed iron-headed arrows. Abeokuta, West Africa.
 322. Leather Mandigo QUIVER. West Africa.
 323. Leather Chinese QUIVER.
 324. QUIVER and 12 ARROWS poisoned with aconite, and a small basket to contain the poison. Digaroo Mishmees, Assam.
 325. QUIVER and 10 POISONED ARROWS. Soolikotta Mishmees, Assam.
 326. QUIVER and 15 iron-pointed barbed ARROWS. Africa.
 327. Red velvet QUIVER, embroidered. India.
 328. Esquimaux QUIVER of sealskin, having a stick along one side to keep it straight, terminating in a carving of an animal's head. Compare this with the drawing of an Assyrian quiver on screen.

SCREENS 12, 13, 14, 15, AND 16.

CLUBS.

Of all the weapons employed by savages the club is probably entitled to be considered the most primitive. Adhering to the system adopted in describing the other weapons, the clubs on the upper row of Screen 12 are arranged to show the sequence of development from the simple stick, and, as in the preceding series, it is in Australia that the most primitive types are found. Nos. 329 to 343, Figs. 34 and 35, show the development from the simple stick to Development of form.

Mushroom
form.

the mushroom headed form, commencing with an elongated swell in the centre, which increases and becomes confined to the upper end so as to form a head. In No. 340, Fig. 36, the periphery of the head is shaped into a horizontal ridge round the broadest part, and this ridge in the three succeeding specimens develops into a mushroom shape, flat on the under side and convex at top. As we have already seen in the case of the war-pick or malga, the New Caledonian weapons, have a close resemblance to those of Australia, and we accordingly find that the mushroom-headed clubs are also represented in that island, with the addition of the peculiar handle common to all the New Caledonian weapons, No. 347, Fig. 37. In Nos. 350 and 351, the head is further ornamented with four concave grooves or indentations on the sides; these grooves, no doubt, originated in chips or flaws on the surface of the head, and, as usual with savages, and as we have already seen in the case of the boomerang of Australia, No. 144, Fig. 9, p. 33, and war-picks of the New Caledonians, the desire to produce symmetry would lead them to cut other grooves at equal distances to correspond to those produced by nature, and as the prominences between these grooves would be found advantageous by concentrating the force of the blow, they would be retained and developed; accordingly we find in No. 352, Fig. 38, the grooves are deepened so as to produce a star-shaped mace head, and in No. 353 the projections are converted into spikes. Other varieties of form would be suggested by the shape of the wood, which is always the guide of the savage in the construction of his tools. In No. 355 we have a mushroom head flattened so as to produce a T-shaped instrument sharp at both ends. In No. 356, Fig. 39, we see that the workman in his endeavour to form a weapon resembling No. 417, has left one of the projecting pilei of the mushroom head much larger than the others, or he has improved upon the idea suggested by the former implement to produce a pick-shaped head, and in No. 357, Fig. 40, we perceive that some admiring coadjutor having been struck by the resemblance which this form bears to the head of a duck, has added the eyes by inserting a piece of pearl oyster on each side, and marked the mouth at the extremity of the projection, thus forming a parallel to the development already shown in the case of the New Caledonian war-picks, Nos. 191 to 197. When after studying the series of developments represented in the foregoing specimens, we come upon a weapon such as No. 360, Fig. 41, an Indian steel mace with the head of a horned bull

Duck-headed
form.

inlaid with gold, and showing evidence of an advanced state of the arts, we are able to understand how such a form may have originated at remote times, and have subsequently been adopted to symbolical uses. Nos. 358 and 359, Fig. 42, from the island of Santa Cruz are evidently links in the chain of another series of forms, by which a bird's head has been developed in a similar manner to those of New Caledonia.

As we become more distant from Australia, which represents the cradle of the arts, it becomes more and more difficult to trace forms to their root origins, the evidence of connexion becomes more fragmentary, it is only here and there that we can obtain a sequence, and it becomes necessary to group the implements in clusters so as to trace, as far as possible, the distribution of like forms in particular areas. Before doing this, however, it is desirable to turn to the African continent. Here an advanced state of culture has been introduced, and the distribution of the several forms of clubs is more broken than in Australia. Similarity of form to the Australian weapons Africa. may be traced in some places. No. 361 it will be seen corresponds pretty closely to No. 329. No. 362, the club of the Shillooks, Nos. 363 and 364 corresponds in form to Nos. 330, 331, and 332. No. 365, the curved Lissan of the Dinka tribe, resembles some of the representations on the Egyptian sculptures. No. 371, Fig. 43, is a mushroom-headed club of the Dor tribe, Central Africa, and corresponds in form to No. 343, 346, and 354, but has the ridge more fully developed. Returning now to the Polynesian isles, Nos. 372 and 373 corresponds in form to Nos. 329 and 361. Nos. 374 and 375 correspond to Nos. 336 and 337. In Nos. 377 and 378 we see the mushroom head represented in the New Hebrides, and in the two succeeding specimens the same form is seen from New Ireland.

The transition from this to the ball-headed club is gradual Ball-headed clubs. and might be easily suggested by some of the earlier forms of Australian clubs such as No. 339, but the spherical knob head is not used in Australia, it belongs to an advanced stage of culture. It is the most common form of club in Africa, being used by the Caffres on the south coast. Nos. 390 to 392, and on the west coast, No. 368. Burton describes it at Abeokuta, where it is known by the name of *Oggau*, and says it is used by the Somaulis and throughout the African interior. A large knob-headed club is carried by the body guard of the Sultan of Angornon near Lake Tchad, and at Karague, Grant says it is the only weapon

Salutes.

used. Here it is interesting to notice a singular coincidence of custom arising, no doubt, not from communication, but from like causes producing like results in different countries. In a condition of savagery where hostility between man and man was the rule, it would become necessary to introduce some mode of salutation when meeting to imply that peace was intended. The most natural mode of disarming suspicion would be by holding the weapon in such a position that it could not be readily used. Grant says that in Karague this club is generally carried over the shoulder, but in meeting a comrade the end of the stick was presented to be touched. This is also the custom amongst the Ashantees in the West Coast, and has been frequently spoken of during the late war. In like manner Capt. Wilkes says that in Fiji the long club is usually carried over the shoulder, but on meeting another it is at once lowered to the ground. The lowering of the fasces of the lictors to a Roman magistrate of superior rank is another example of the same custom, and the practice of lowering the point of the sword in saluting, which prevails in all modern European armies at the present time, has without doubt its origin in like causes. At Abeokuta, Burton says that this club is modified into a hockey stick about 18 inches long ornamented with brass nails along the line of percussion. It is used for throwing as well as for striking, throughout Africa. The Kaffir knob-kerie has a small circular cavity on the surface of the knob, the use of which I have not been able to discover; these cavities are sometimes in the sides, sometimes underneath the head, and are of greater or less depth in different specimens. The Kafir knob-kerie, No. 391, Fig. 44, has the head at the side, but those of the Hottentots, which are of a more primitive construction, have the knob at the end of the staff. A similar weapon to this is used in the Fiji Islands called *Ula*, where it is also used for throwing with great dexterity, and was in former times a national weapon of assassination. These short knob-headed clubs are carried in the belt, generally two at a time, and are in some cases tastefully ornamented, Nos. 384 to 389, Fig. 45. According to Missionary Williams similar clubs are used in Tongatabu, Friendly Isles. In North America this weapon is used by the Algonquins and others, and is known by the name of *Pag-ga-magun*, No. 393, Fig. 46. It is of a more advanced form than that of the Africans or Fijians, having a tabular instead of a round shaft. Like the Kaffir knob-kerie the ball is on one side of the end, the tabular shaft being more or less curved

North
America.

towards it in different examples. This curvature, though common to many varieties of savage weapons from other countries is especially characteristic of the North American weapons. Schoolcraft says, "there is no instance amongst the North American Indians in which the war club employed by them is made of a straight piece, or has not a curved head." There can be little doubt, however, that like the Kaffir knob-kerie, the form was originally straight; indeed, it may be laid down as a canon in the art of club making that the curved form of a weapon was generally preceded by a straight one of the same kind; the clubs of the North American Indians are of too advanced a type to enable us to trace them to their origin, but according to Schoolcraft, there is a tradition of a formidable weapon used in ancient times amongst the Algonquins, which "consisted of a round stone fastened to the end of a staff and enclosed in a new skin which, when it dried, became very tight round the stone, and after being painted with devices, assumed the appearance of a solid globe upon a staff." An illustration of this weapon is attached to the screen taken from the description of an Algonquin chief, and it appears probable that this points to the origin of the ball-headed wooden clubs that are now so prevalent upon this continent, Fig. 47. Schoolcraft also states his opinion that the oval stones with a groove round them, found in the United States, which appear to resemble stone sinkers, were in reality used as mace heads by the Indians. Clubs of the form of sticks, curved at the end, are represented in Nos. 396 to 398, from Abyssinia and Eromango, New Hebrides. In form they resemble the Irish hurley stick, No. 399, which is used at the present time. The Kaffirs, in throwing their knob-kerie, frequently cause it to hit the ground before the object and strike it by ricochet. No. 402 is an Australian missile, derived from the club, consisting of a long oval head, with a piece of thin cane attached instead of a shaft; it is used to throw at kangaroos in the same manner and will ricochet along the ground for a considerable distance. It has been supposed that the mace was suggested by the use of a small tree with the root torn up from the ground, the branching roots cut off, and pointed to serve as spikes. Such clubs are used in the Tongataboo and Fiji islands, Nos. 403 to 405, and are called *Maloma* according to Wilkes; Williams however speaks of them as the *Nada* and *Dromu*, but I am inclined to think the mace head was rather suggested gradually, in the manner before described. The simple root, if found at all, is not

Curved clubs.

Root-headed clubs.

generally used as a club in Australia, to which country we invariably look for original forms. Natural forms are quickly adopted when they in any way fit in to the sequence of ideas already established in the mind of man, but neither in a high nor in a low condition of culture does nature impart her lessons to minds that are not prepared to receive them. The root-headed club appears rather to belong to a more advanced age than to the very earliest phases of culture. Clubs with rows of spikes down the sides of the thick ends are used in Australia, Nos. 408, 409, 410, Fig. 48, and correspond very closely to those from the White Nile obtained by Mr. Petherick, Nos. 406 and 407, Fig. 49. In the Egyptian department of the British Museum there is a similar club set with rows of spikes for about half its length. Burton describes a somewhat similar form of club at Abeokuta, and in the museum at Boulogne there is a Kabyle club similarly studded with iron nails. The Basques, like the inhabitants of the Balearic isles, Sicily, Sardinia, and the eastern part of Spain, are supposed to be the remnant of the aboriginal inhabitants of Europe which preceded the Celts. Their language is supposed by some to contain roots connecting it with the earliest forms of speech prevailing in the Pacific Ocean. They are now confined to the region of the Pyrenees; they carry no arms, but a bâton ferré of this kind, which they use with wonderful dexterity. Captain Owen Stanley, in his account of the voyage of the "Rattlesnake," describes a club of this kind 27 inches long, with a cylindrical head $3\frac{1}{2}$ inches long studded with knobs like the Australian specimen. The missionary Williams gives an illustration of the same kind of club from Fiji, and a similar club from Samoa is in the Christy collection; its distribution is therefore probably continuous in this region. Nos. 411 and 412 are clubs similarly constructed, though more elaborately carved and finished from the Friendly Isles; one of the chief uses of the knobs is to catch the darts of the assailant when the club is used in parrying them. Clubs of a mushroom-headed shape, consisting of a staff 3 to 4 feet long, passing through a hole in a polished quoit-shaped stone head, of which a specimen is seen on the North Wall, are used in Cape York, North Australia, and Captain Owen Stanley found them in Darnley Island and New Guinea. They are also used in Wednesday Island, Torres Straits.

Nos. 414 to 417, Fig. 50, are a combination of the mace and mushroom-headed clubs from New Hebrides. They are capped with a mushroom-headed top with knobs beneath and

a projecting concave ridge between each knob. I have not been able to trace the history of this concave ridge, but on examining the two next specimens, Nos. 418 and 419, Fig. 51, it will be seen that they represent the same form of club flattened. The broad top represents the mushroom head seen only in section; the concave sides represent the neck of the club between the head and the knobs; the expansion beneath is the swell of the knobs, and the concave projecting ridge between the knobs is still retained in its proper place between the parts representing the knobs. In No. 419A, Fig. 52, the concave ridge is converted into the representation of a human nose, the upper part forms the head-dress, and the lower swell the face. In No. 419B, the face has undergone still further modifications. These objects are well worthy of the attention in studying the transitions of form; the connexion, though clear enough when pointed out, would probably pass unnoticed by any who had not studied these weapons from the point of view of development. No. 429 is a Friendly Island club, with knobs of wood resembling the heads of nails; and No. 430 is a somewhat similar club, curved on one side, with a ridge which has been converted into the representation of a human face.

Human-headed
clubs, New
Hebrides.

Nos. 431 to 434 are Fiji clubs called *Toka*. They are probably derived from an earlier form, resembling the Australian spiked clubs Nos. 408 to 410, but curved on one side so as to present the point to the adversary. The points are of different degrees of length, and finish. Nos. 421 to 428 are maces belonging to an advanced age of culture, used in India, and the middle ages of Europe. Nos. 427 and 428 are English of the 15th century; they were usually carried at the saddle bow, a custom which, according to Meyrick, appears to have been introduced from Asia; they were used to break open the armour of the knights, and like many ancient forms of weapons were disused in the time of Elizabeth; the plain wooden club appears to have been retained by some races long after it had been superseded by more formidable weapons. The Daci are represented using it against the Romans or Trajan's column; it is represented on the Bayeux tapestries of the 11th century, and Demin gives an illustration of a German one of the 13th century from the "*Æneid*" of Henry of Waldeck. "Its use," says the author of "*Horæ Ferales*," "among the Germans lasted long into the middle ages, but it seems probable that the Germans, like the Normans, believed that there were beings who could not be injured by iron,

European
maces.

"just as it was thought, even late in the 17th century, "that there were some people whom neither steel nor lead "could reach." Another form of club, with a round or thick stem, expanding to a broad flat end, and tapering towards the handle, is represented in Nos. 435 to 440, which are from Australia, New Hebrides, New Zealand, and Samoa. No. 441, also of this form but flatter, is from Solomon's Isles.

Flat clubs.

We now come to short flat clubs. These are not used in Australia. In New Zealand the *Pattoo-pattoo* or *Meri* is a short oval or leaf-shaped club, constructed of stone, wood, or bone, Nos. 450 to 458. It has been said to be derived from the form of a bladebone of some animal, but this is unlikely; its resemblance to the polished stone celt renders it more probable that it was derived from that instrument which is used in the hand in Australia without a handle; the circumstance of the *pattoo-pattoo* being always sharp at the end like the sharp edge of a stone hatchet, and of its being invariably used for prodding with the sharp end and not for striking on the side, gives probability to the opinion that the *pattoo-pattoo* is a stone axe-head adapted for use in the hand, and is not derived from a flat club. An almost similar form, however, in wood, is used as a club in New Guinea, see an example of this kind of club exhibited in glass case under the head of Ornamentation; the ornamentation also on this club corresponds in a remarkable manner to that of New Zealand, being a broken coil pattern.

At Chatham Island, east of New Zealand, Vancouver's expedition found *pattoo-pattoos* similar to those of New Zealand, fixed one on each end of a staff about two feet in length, thus forming a kind of two-headed club, like Nos. 563, 564. No. 442 is a somewhat similar implement to the *pattoo-pattoo* from Solomon Isles, but pointed and lozenge-shaped instead of leaf-shaped. Nos. 443 to 445 are short clubs of somewhat analogous forms from the Friendly Isles, and other islands of the Pacific. The variations of the New Zealand *pattoo-pattoo* consist in the modifications of the sides, in Nos. 456, 457, one half is of the normal type and the other half, varied in No. 458, deep indentations are cut on both sides, and there are other varieties not shown in this exhibition. The North American Indians of the neighbourhood of Nootka Sound use a bone club of exactly the same form as the New Zealand weapon, and Klemm gives an illustration of one from Peru in all respects similar to the New Zealand pattern. There is, however, some doubt as to whether that author has not been mistaken

in attributing this specimen to the Peruvians ; it would be necessary that other examples should be forthcoming in order to establish the fact which, if true, would be of a nature to prove connexion. In British and Dutch Guiana short flat clubs somewhat resembling the pattoo-pattoo but with longer handles and differently formed ends are used, Nos. 446 to 449.

No. 459 is a sword-shaped club from New Zealand with a carved handle, possibly a copy of some iron modern weapon. No. 460, a wooden tabular battle-axe from the Djibba Negroes, obtained by Mr. Petherick, appears to be a copy of an Egyptian form represented in the ancient sculptures ; Tabular clubs. the Egyptian one, however, has a ball attached to the back of it, Fig. 52A. Nos. 461 and 462 are two North American Indian clubs of the flat tabular form peculiar to that continent. This tabular shape is so unusual amongst savages, not being met with in any other part of the world, if we may except the last-mentioned specimen, that it might almost be thought to have been a modern introduction arising from the employment of European planks ; but it appears to have been original, for in the account of the expedition sent out for the relief of the colony in Virginia by Raleigh, in 1586, " flat, edged, truncheons " of wood about a yard long are mentioned. In these it is said were inserted points of stag's horn much in the same manner as now practised, except that European lance blades have been substituted for the horn points.

The next series is arranged with the view to show the varieties between the plain round stick, club, and paddle. South Sea Island forms. Nos. 463, 464, are long, flat, pointed clubs from Australia. Nos. 466, 467, are cylindrical staves from the Fiji Islands, Fig. 53. The next three specimens, Nos. 468 to 470, show a gradual increase in the size of the upper end, Fig. 54. No. 471 is the same form as the last, flattened ; in No. 472 we see this form converted to other uses and apparently intended to be employed as a pounder, from the Friendly Isles. The next 13 specimens show a gradual expansion of the head which becomes broader and flatter, assuming a pointed leaf-shaped form, Fig. 55. This form in its varieties extends all over the Polynesian Islands as far as Easter Island, where Beechey describes them " of a flattened oval " form tapering towards the handle." Ellis says that it is easy to cleave a skull with one of these weapons. Nos. 485 to 487, from Solomon Isles, very much resemble the New Zealand *Hani*, Nos. 478, 479 ; in the latter the ornament at the handle represents a protruded tongue and mouth, the form of the lower end of the Solomon Island clubs

is sufficiently near to suggest the possibility of a connexion of ideas, but not close enough to admit of certainty. In No. 488, Fig. 56, we see a leaf-shaped club from the Friendly Isles of the form already described, the blade being more expanded and ornamented with two cross ribs on the lower part of the blade; in the succeeding specimens, Nos. 489 to 493, may be seen an extension of the cross-ribbed ornamentation, which is ultimately developed into a serrated edge, Figs. 57, 58. These serrated clubs are found in the Friendly Isles and Samoan group, and are especially the characteristic of those from the island of Mangaia, one of the Hervey group or Cook's Islands, where they are sometimes bent at right angles, of which sort there is a good specimen in the Chichester Museum. These serrated edges are also used with spear heads, as may be seen by the specimen Nos. 658 to 660. It appears also from a specimen in the Museum at Boulogne, that a serrated club with crescent-shaped projections one above another is used at Honolulu in the Sandwich Isles; but the tickets upon savage weapons in this and other local museums are not infallible, indeed, rarely to be trusted. These serrated clubs are useful in catching the darts of the enemy. A still further extension of the same idea is shown in a small implement from Tahiti in the British Museum, Fig. 58A, in which the indentations are made to alternate on opposite sides, by this means producing a kind of zigzag club apparently the most useless of weapons, the construction of which would be unintelligible were it not for the serrated implements which I have described. In No. 494, Fig. 59, we see the commencement of another series of forms in the clubs of the Samoan group. The lower part of the blade is enlarged producing a concave instead of a convex edge on the sides of the blade; in the next specimen, No. 495, the lower part of the blade is further enlarged and a rib added apparently for ornament across the broadest part. Nos. 496 and 497 show a still further expansion of this part of the blade, Fig. 60. Passing to the Fiji Islands we see in No. 498, Fig. 61, a sequel to the types of the Samoan group, the lower part of the blade and cross rib of this weapon, which is here called *Airou*, has developed so as to project far beyond the other parts and form a kind of cross bar with which to pick a hole in the enemy's skull. Nos. 499 to 501 are varieties of the same form from the Fiji Islands. No. 502 is another variety of this form from Fiji. No. 503 is a similar form used in Fiji, Samoa, and the Friendly Isles. No. 504 shows a further expansion of the lunette-

shaped blade. No. 505, from Marquesas, it will be seen, is the same form as the last with the projecting cross ribs of Nos. 498 and 501 added, and the whole ornamented with the peculiar pattern prevalent in these islands, which will be further alluded to when treating of ornamentation.

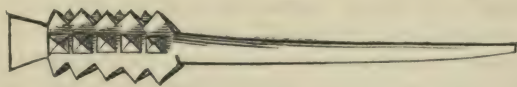
No. 506, Fig. 62, is a form of club that appears to be derived from No. 502, both being from the Fiji Islands. It has been supposed by some to have been an imitation of the butt end of a European fire-lock, but this is certainly an error; its varieties prove it to be an indigenous weapon, although its origin is not so clearly traceable as that of some other forms, and there have probably been intermediate links which are not preserved or which have escaped my notice. This is a specimen of the straight form of the variety. The others, according to their degrees of curvature, Nos. 507 to 518, Fig. 63, are grouped on each side. Two if not three distinct varieties of this form are exhibited, one with rounded outline, the other with angular sharp edged projections, and the third with a flat blade. Only the smallest specimens are used for war, the others being merely ornamental. Whether the curved or the straight form is the earlier, is doubtful, probably the latter, but the ridge at the end, if intended to cleave the skull of an adversary, would be adapted to this purpose only in the curved form. It is probable that this ridge will be found to belong to some earlier form of the weapon not here represented; the origin of this form must therefore, for the present, remain undecided. Many of these points could, no doubt, be elucidated on the spot by any one who had previously made himself acquainted with the missing links of evidence in a systematically arranged museum. Nos. 519 and 520, Fig. 64, are formed into the representation of a flower, probably a lotus. It might, perhaps, be supposed by any one who was not familiar with the transitions of form that are found in weapons of this and other countries, that this flower-shaped club marked the origin of this variety; but analogy would lead us rather to believe that the flower was suggested by some of the successive forms through which the weapon passed in the hands of these ever varying yet slowly progressing people. Nos. 521 to 524 are varieties of flat clubs or glaives more or less curved, from Savage Island to the eastward of the Friendly group, developing into a long paddle-shaped form in No. 524 which, however, is used as an offensive weapon. The long pointed handle is peculiar to this island, and the wood usually of a white colour. Of flat triangular shaped clubs Nos. 526 and 527 from New Ireland are examples; No. 528

of a similar form from New Hebrides ; No. 529 also from New Hebrides, has an angular piece cut out at the end giving the club the form of a fish's tail. A nearly similar form to these, but much larger, is seen in No. 530 from the Castribo Indians of the River Yucayali in South America. In these forms, as well as in the leaf-shaped specimens before-mentioned, we approach towards the paddle which is next to be described in this catalogue. Nos. 532 to 534 are New Zealand weapons called *Pagee*, the blade of which is formed like a quarter of a circle with the staff attached to one of the radii. It is difficult to assign an origin to this form, unless it is derived from a broken fragment of a paddle employed in war. No. 535 is a similar form, probably from New Zealand also, but very inferior in finish.

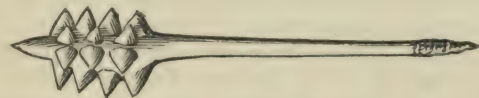
From the foregoing remarks it will be seen that the simplest forms of clubs are to be found in Australia, from which continent a connexion of form may be traced over the whole of the Polynesian Islands, Fiji, serving as a starting point for many varieties which spread over the adjoining islands to the eastward, carried thither in the outrigger canoes of these enterprising navigators, or even, perhaps, it might not be too much to assume, derived originally from the ancient continent which is known to have sunk between the islands ; but it is more probable that the connexion of form observed throughout the Pacific was communicated by sea ; for the language, which is the same throughout the Polynesian Islands, could never have retained its form and vocabularies unchanged, unless by frequent intercommunication between the islands. The names for so primitive a weapon as the club must necessarily be more numerous than those used for the bow and arrow, and sometimes several names are employed for the same club ; yet the same word for club may be traced through many of the islands. Thus, according to Turner's account in Sandwich Island, New Hebrides, it is *Lakau* ; in Niva, New Hebrides, *Rakau* ; in the Friendly Isles, *Akau* ; in Savage Island, *Lukau* ; and in Marquesas, *Akautoa*.

Days and weeks of patient toil are spent on many of these clubs, and some of the curved ones in Fiji are formed whilst growing upon the tree ; they are cut out with shells, and rat's teeth set in hard wood, rasped with the mushroom coral or the shagreen like skin of the ray fish, and polished with pumice stone. So also in Africa, Speke says that the leaves of the sand-paper tree, the surface of which resembles a cat's tongue in roughness,

49



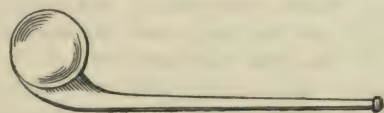
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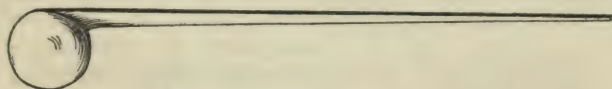
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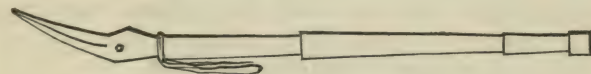


PLATE IV.



are used to polish the clubs and spear handles. The Tahitians do not ornament their clubs like some of the other islanders, but those of the Harvey, Friendly, and Fiji groups are carved with great taste, and High Island one of the Austral group is remarkable for its elaborate carving. The small tabular projection at the handle end of the club with a hole in it for a plaited band is peculiar to the Samoan Islands. In use, the club is invariably aimed at the head, the spear at the body. Elis says the inhabitants of the Austral Isles use two kinds of club called *Omore* of the Aito or Iron wood, one short and heavy like a bludgeon, the other long and furnished with a broad lozenge-shaped blade. Clubs do not appear to be much used in Tahiti judging from their rarity in museums. Beechey mentions heavy clubs at Serie Island, and a club shaped like a bill-hook at Lagoon Island. They are used at Savage Island and Vancouver mentions them at Oparo in the Austral Isles. In the New Hebrides they are used at Vate or Sandwich Island, at Fortuna, at Mallicollo, and they are one of the principal articles of manufacture at Eromango. Many of the clubs in Fiji are constructed for ornamental and state purposes rather than for use, and are dedicated to a spirit, when they are deposited in the Mbure. These have emphatic names such as "For war, though all be at peace," and "Beyond all hope," "The priest too late," &c. The clubs intended for use are generally smaller and more portable than the others. In like manner, Schoolcraft says, that amongst the North American Indians those intended for war were smaller and less elaborately finished whilst others are constructed for use in dances and other ceremonial purposes, and partake of a decidedly symbolic character.

SCREEN 12.

CLUBS.

DEVELOPMENT OF MUSHROOM-HEADED CLUBS.

329. Plain round STICK CLUB or WADDY. Australia. Fig. 34.
330. WADDY, with a groove at the side and a slight swell in the middle. Australia.
331. WADDY of the same form, slightly flattened. Australia.
- 332 to 335. WADDIES of the same form, with a row of projecting iron nails on the line of percussion. Australia.

- 336, 337. WADDIES of the same form, with the head still further developed. Australia. Fig. 35.
338. WADDY of the same form, curved. Australia.
339. WADDY of the same form; the head still further enlarged.
340. WADDY, with the circumference formed into a horizontal ridge approaching the mushroom form. Australia. Fig. 36.
- 341 to 343. Mushroom-headed CLUBS. Australia.
- 344 to 349. Mushroom-headed CLUBS. New Caledonia.
Of a similar form to the preceding, with the addition of the handle peculiar to New Caledonian weapons. Fig. 37.
- 350, 351. Mushroom-headed CLUBS, with four concave indentations at the side. New Caledonia.
352. Mushroom-headed CLUB, with the indentations depressed so as to produce a star-shaped mace head. New Caledonia. Fig. 38.
353. CLUB, the projections further developed into radiating spikes round the side of the head. New Caledonia.
354. CLUB. Another variety of the same form. New Caledonia.
355. Mushroom-headed CLUB. New Caledonia. The head flattened so as to produce a T-shaped implement.
356. CLUB of the same form as No. 354, with one of the projections much larger than the other so as to produce a kind of pick-shaped head. New Caledonia. Fig. 39.
357. CLUB. The resemblance of the last form to a duck's head has suggested the insertion of mother-o'-peal eyes on each side and a slit to represent the mouth, thus constituting a parallel to the development shown in the series No. 192 to 197. Fig. 40.
358. Boat-shaped CLUB. Island of Santa Cruz or Egmont Isle.
359. CLUB, in which the last form has been converted into a bird's head. Island of Santa Cruz. Fig. 42.
360. An Indian Steel MACE inlaid with gold, with the head in the form of a horned bull, probably from Kolapore. Fig. 41.

AFRICAN CLUBS.

361. African CLUB; a straight stick corresponding to No. 329.

362. SHILLOOK CLUB. Central Africa. With a swell in the middle corresponding in form to Nos. 330, 331, and 332.
- 363, 364. CLUBS of similar form, from Central Africa.
365. Curved LISSAN. Dinka tribe, White Nile. Obtained by Consul Petherick. Similar in form to some of the clubs represented in the Egyptian sculptures.
- 366, 367. Kaffir KNOB-KERRIES of rhinoceros horn, corresponding in form to No. 339.
368. Ball-headed CLUB or KNOB-KERRIE. Probably from West Africa.
369. Knob-headed CLUB. Africa.
370. CLUB, similar to No. 369. From the White Nile.
371. Mushroom-headed CLUB. Dor tribe of Negroes. White Nile. Corresponding in form to Nos. 343, 346, or 354, but having a broader head and sharper ridge. Fig. 43.

MUSHROOM-HEADED CLUBS, NEW HEBRIDES AND NEW IRELAND.

- 372, 373. CLUBS. New Hebrides. Corresponding in form to Nos. 329 and 361.
- 374, 375. CLUBS, with a swell corresponding to Nos. 336, 337. New Hebrides.
376. CLUB of the same form, from Friendly Islands.
- 377, 378. Mushroom and mace-headed CLUBS. Tanna. New Hebrides.
- 379 to 382. Mushroom-headed CLUBS. New Ireland.
383. CLUB with a lozenge-shaped head. Locality unknown.

BALL-HEADED CLUBS.

- 384 to 389. Ball-headed CLUBS, called Ula. Fiji Islands. Used as missiles. Fig. 45.
- 390 to 392. Ball-headed CLUBS. Kaffir. South-east Africa. Ball slightly on one side. Fig. 44.
- 393 to 395. Ball-headed CLUBS, North America, called Paga-ma-gun; the ball on one side of the tabular stem. Fig. 46.

CURVED CLUBS.

- 396, 397. CLUBS, shaped like flat sticks, curved at the end, of red wood. Eromango, New Hebrides.
398. Curved LISSAN. Abyssinia or Nubia.
399. Modern HURLEY STICK used by the Irish at the present time. Of similar form to No. 398.

MISCELLANEOUS FORMS.

400. CLUB of hard dark wood, apparently representing a stone hammer in its handle. Locality not known.
401. AUSTRALIAN IMPLEMENT, consisting of an elongated oval-shaped piece of wood. Stuck into the end of a cleft stick. Object unknown, possibly a stick sling.
402. AUSTRALIAN IMPLEMENT for throwing at kangaroos along the ground, consisting of a long oval head with a piece of thin cane attached to the point of one end. No doubt derived from the waddy.

SCREEN 13.

MACES.

403. Short club called *Maloma*, the head of which is formed of the branching roots of a tree. Fiji Islands.
- 404, 405. Long CLUBS of the same construction, formed of the branching roots of a tree, studded with teeth. Tongataboo and Fiji.
- 406, 407. Mace-headed CLUBS with rows of wooden spikes along the sides of the head. Dor tribe, White Nile. Obtained by Consul Petherick. Fig. 49.
- 408 to 410. Mace-headed CLUBS, of precisely similar form, with rows of wooden spikes similarly arranged to Nos. 406 and 407. Australia. Fig. 48.
- 411, 412. Mace-headed CLUBS, with rows of knobs similarly arranged to the last, but more elaborately finished and carved, and longer. Friendly Isles.
413. MACE, of somewhat similar form, but with longitudinal furrows and a broad end. Samoan Group.
- 414 to 417. Mace-headed CLUBS, of somewhat similar construction, to the preceding examples, capped with mushroom heads and knobs beneath, having a projecting concave ridge between each knob. New Hebrides. Fig. 50.

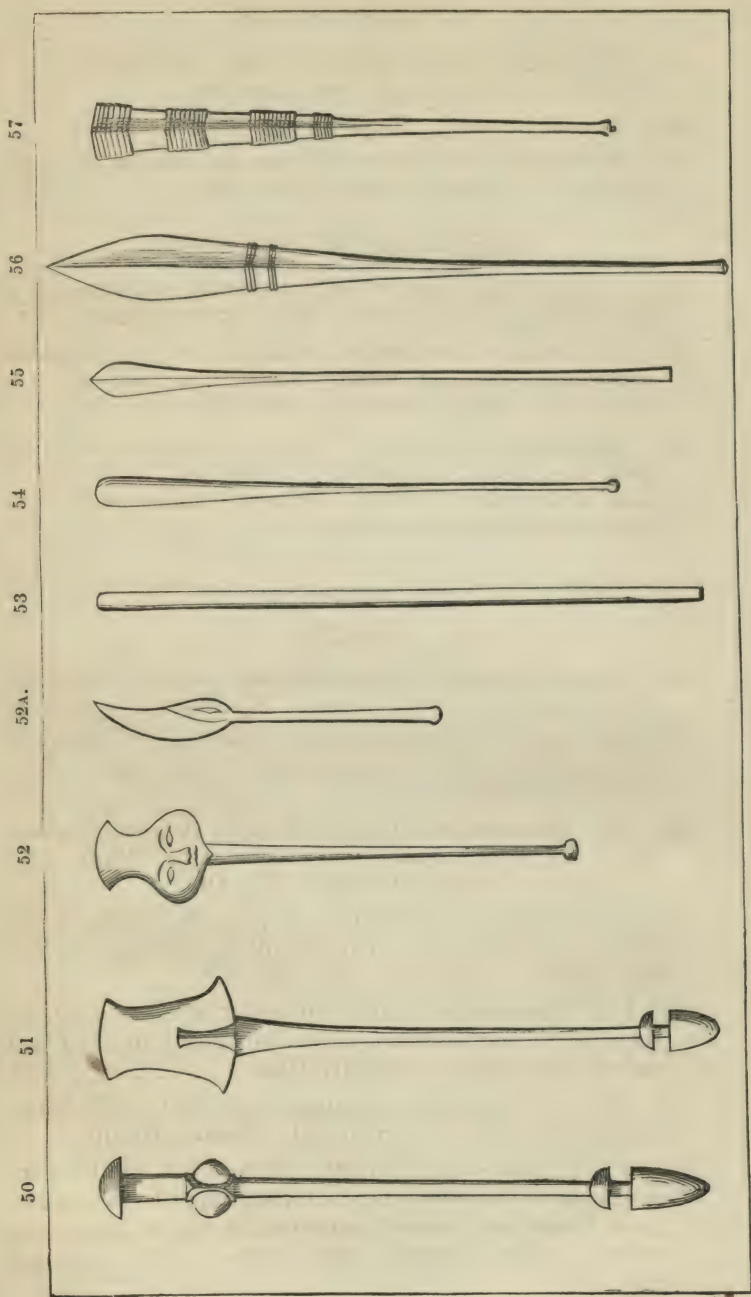


PLATE V.



- 418, 419. CLUBS. New Hebrides. The heads represent the mushroom heads and knobs of the preceding specimens, flattened, with the projecting concave ridge still retained on the lower part. Fig. 51.
- 419A. Fig. 52. In this CLUB the preceding forms are converted into the representation of a human face, the upper lobe formerly representing the mushroom head, here represents the head dress, the lower lobe the face, and the concave ridge is converted into the nose of the face. New Hebrides.
- 419B. CLUB of the same form as the last, representing a human head, the eyes are added by inserting a red and black bead.
420. A somewhat analogous form to the preceding. Friendly Isles.
421. Mace, with elongated oval head studded with iron square-headed nails. Locality not known.
422. MACE, with a bronze spiked head, somewhat resembling No. 353, in form. Locality unknown.
423. Iron MACE, called Lobandi. North-west Provinces of India.
424. Indian iron MACE with hand guard.
425. Indian iron MACE inlaid with gold ornamentation.
426. Persian plain iron MACE with oval head, resembling No. 336 in form.
- 427, 428. European iron MACES. 15th century. Nearly similar in construction to No. 425.
429. Long CLUB. Friendly Isles. The head studded with wooden knobs resembling nail heads.
430. A somewhat similar form, with the head curved on one side, and a ridge which is formed into the representation of a human face.
- 431 to 434. Fiji curved CLUBS with spikes, called Toka; the form of which may be described as that of Nos. 408, 409, and 410, bent on one side.

BROAD-ENDED CLUBS.

435. Broad-ended CLUB with thick stem. Australia.
- 436 to 438. Broad-ended CLUBS. Samoan Group.
439. Broad-ended CLUB. Probably New Ireland.
440. Broad-ended CLUB. New Hebrides.

SHORT FLAT CLUBS.

441. Short flat broad-ended CLUB. Solomon Isles.
442. Short flat lozenge-shaped CLUB, somewhat resembling the New Zealand pattoo-pattoo.
- 442A. Lozenge-shaped CLUB, rather larger than the last, the handle bound with cinnet.
- 443 to 445. Short flat leaf-shaped CLUBS. Friendly Isles and other islands of the Pacific.
- 446 to 449. Short flat CLUBS. British Guiana, South America.
- 449A. CLUB, somewhat similar to No. 448, having a lozenge-shaped cross section.
- 450, 451. New Zealand bone PATTOO-PATTOO of rude construction.
- 452, 453. The same, more carefully finished.
454. The same of basalt.
455. PATTOO-PATTOO, of the same shape in gun metal. Made by Sir Joseph Banks to take out to New Zealand, with his arms engraved upon it.
- 456, 457. Wooden PATTOO-PATTOOS. New Zealand. One side of the normal type, and the other varied.
458. Wooden PATTOO-PATTOO. New Zealand. With deep indentures carved on both sides.

TABULAR CLUBS.

459. New Zealand. Sword-shaped CLUB, with a carved handle. Possibly a copy of some European iron sword.
460. Wooden BATTLE-AXE, of tabular construction, resembling the Egyptian battle-axe represented in the sculptures. Djibba Negroes, White Nile. Obtained by Consul Petherick.
- 461, 462. Flat tabular CLUBS. North America.

SCREEN 14.

SERIES ILLUSTRATING THE DEVELOPMENT OF
THE BROAD PADDLE-SHAPED CLUB FROM
THE PLAIN STICK, SOUTH SEA ISLANDS.

- 463, 464. Flat sword-shaped CLUBS. Australia.
465. CLUB or SPEAR. Locality not known.

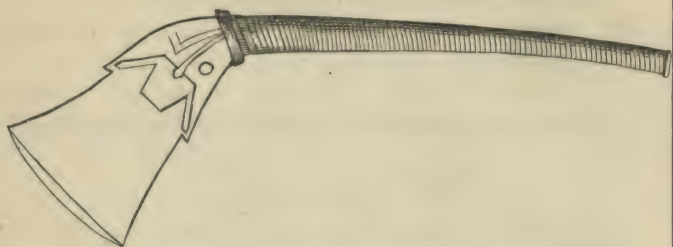
- 466, 467. Plain and round cylindrical CLUBS. Fiji Islands. Fig. 53.
468. CLUB of the same form as No. 467, the end slightly enlarged.
469. CLUB of similar form to the last, with a still further enlargement of the end.
470. CLUB of similar form to the last, the end still further enlarged and rounded. Fig. 54.
471. A similar CLUB to the preceding, flattened.
472. CLUB, of nearly the same form as the preceding examples. From the Friendly Isles. Elaborately carved, and probably used as a pounder.
473. CLUB of similar form, carved all over, with enlarged end slightly flattened. Friendly Isles.
474. CLUB of similar form, carved all over, the end still further enlarged and flattened. Friendly Isles. Fig. 55.
475. CLUB of the same form, showing a still further expansion and flattening of the blade. Friendly Isles.
476. CLUB of a somewhat similar form, from New Ireland.
477. CLUB of a similar form, ornamented with the representation of a human head at the handle. New Ireland.
- 478, 479. CLUBS of somewhat similar forms from New Zealand, called *Hani*, ornamented at the handle with the representation of a protruding tongue and mouth.
480. CLUB of a similar form, the blade further expanded, the stem bound with coloured grass. Solomon Islands.
481. CLUB of a similar form, from Solomon Islands, of dark brown wood.
482. Long STAFF. Use and locality not known.
483. CLUB of a similar form to No. 481, showing a further expansion of the blade. Solomon Isles.
484. New Zealand *Hani*. Probably unfinished, with an expanded blade.
- 485 to 487. CLUBS of a somewhat similar form, from Solomon Isles. One ornamented with feathers in the middle. It is possible that the form of the enlargement at the lower end may be derived from that of Nos. 478, 479.
488. A similar class of CLUB, from the Friendly Isles, showing a still further expansion of the blade, which is ornamented with two cross ribs on the lower part. Fig. 56.

489. CLUB, the blade still broader than the preceding examples, carved all over, from the Friendly Isles. It has one cross rib more fully developed.
490. Flat broad-ended CLUB with four sets of cross bands on the blade. Fig. 57.
- 491 to 493. CLUBS. Varieties of the same form, from Samoa; the cross bands developing into a serrated edge. Fig. 58.
494. CLUB, a variety of the same form, from Samoa; the lower part of the blade is slightly enlarged, producing a concave edge on the side of the blade. Fig. 59.
495. CLUB, showing a further enlargement of the lower part of the blade, with a cross rib along the broadest part. Samoa.
- 496, 497. CLUB of the same form as the preceding examples, showing a still further expansion of the lower part of the blade. Samoa. Fig. 60.
498. CLUB, the lower part of the blade and cross rib in this specimen has developed so as to project far beyond the other part of the blade, and form a kind of pick with which to strike the skull of the enemy. Fiji Islands. Fig. 61.
- 499 to 501. CLUBS. Varieties of the same form. Fiji Islands.
502. CLUB. Another variety of the same form. Fiji Islands.

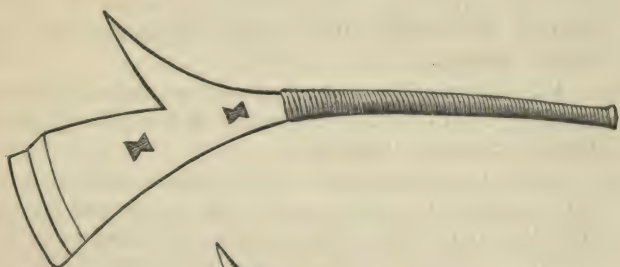
SCREEN 15.

503. CLUB of a similar form used in Fiji. Samoan and the Friendly Isles.
504. CLUB of a similar form, with the lunette-shaped blade further expanded.
505. Marquesas CLUB, being the same form as the last, with the projecting ribs of Nos. 498 and 501 added; the whole ornamented with the pattern peculiar to Marquesas.
506. CLUB. This form of club appears to be derived from that of No. 502, both being from the Fiji Islands. Fig. 62.
- 507 to 518. CLUBS. Varieties of the same form as No. 506, showing different degrees of curvature and flatness of blade. Fig. 63.
- 519, 520. CLUBS. The curved form of this variety appears here to have suggested the idea of a flower head. Fig. 64.

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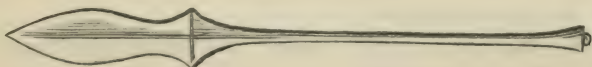
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59



58A.



58



PLATE VI.



SCREEN 16.

521 to 524. Varieties of flat CLUBS and GLAIVES from Savage Island, developing into the paddle shape in No. 524.

524A. IMPLEMENT, said to be a punting pole from Savage Island.

525. Broad-ended CLUB. Solomon Isles. Somewhat resembling No. 487 in form.

SCREEN 16.

526, 527. Broad-ended paddle-shaped CLUBS. New Ireland.

528. CLUBS of somewhat similar form, from New Hebrides.

529. Similar form, from Malligolo, New Hebrides, with an angular piece cut out of the end so as to give the blade the form of a fish tail.

530. CLUB. A nearly similar form, but longer; used by the Castribo Indians of the river Yucaali, South America.

531. CLUB from some part of the South Sea Islands.

532 to 534. Flat axe-shaped CLUBS, called *Pagee*, from New Zealand. Probably derived from the paddle.

535. CLUB. A nearly similar form, less carefully finished. Probably from New Zealand.

SCREEN 17.

PADDLES.

We have seen in the last series that some of the more advanced types of clubs, especially those from the western side of the Polynesian Islands approached very closely to the form of paddles, and this resemblance is still further shown in the two first specimens exhibited upon this screen, Nos. 536 and 537, from Solomon Islands, Fig. 65, which are of a form analogous to that of No. 488. Notwithstanding this resemblance, however, it would be wrong to infer that the use of paddles arose from the employment of such clubs as are here represented for propelling canoes, the resemblance of the paddle to the spear is not less striking, and of the two it appears probable from such evidence as we possess, that the spear and paddle are more closely allied than the club and paddle. I have not been able to obtain any well authenticated account of paddles being used as clubs, though it is probable they may be so employed in some cases. The thin blade which is necessary to form a good paddle would render it unserviceable as a club. Paddles are less frequently

brought home than war weapons, and therefore the series represented upon this screen is not by any means complete. In a well furnished assortment of paddles of savage races, it would, no doubt, be found desirable to arrange them as I have done the other implements, commencing with the plain stick. It is with a pole or by means of his long spear that the savage shoves off his canoe, by means of a pole he propels it in shallow water, and there can be little doubt that it was with poles or spears that he at first learnt to paddle it through the ocean. It might perhaps be stated as a rule applicable at least in the majority of cases, though not without exception, that the long pointed spear-like paddle is used in deep waters, whilst the short broad-ended club-like paddle is employed in rivers and shallow waters. There can be no doubt that amongst maritime people the paddle has influenced the form both of the spear and club, but it would probably be more correct to say that the three have improved simultaneously, being all three derived from the plain stick. Mr. J. E. Calder in his account of the native tribes of Tasmania, published in the third volume of the *Journal of the Anthropological Institute* says, in describing the native Catamaran, which is used on the south and west coasts: "The mode of its propulsion would shock the professional or amateur waterman. Common sticks with points instead of blades were all that were used to urge it with its living freight through the water, and yet I am assured that its progress was not so very slow." Spears are also used in some parts of Australia to paddle the fragile bark canoes, an illustration of which is given in Mr. J. G. Wood's *Natural History of Man*. According to Captain James Mackenzie, in a paper read before the *Ethnological Society*, by Mr. G. M. Atkinson, the Nicobar islanders use an implement which serves the purpose of a spear and paddle combined. He describes it as being of a long-pointed lozenge shape, about 5 feet long, and in climbing the ship's side, it was passed through the girdle at the back, Fig. 66. It was made of iron-wood, and always carried in the right hand. Mr. T. Baines, in a letter quoted in Mr. J. G. Wood's work above mentioned, speaks of the curious paddles of the Northern Australians, the looms of which are barbed and pointed so as to be used as spears. The fact of the barbed spear-head being on the loom, however, and not on the blade end, shows it to be a makeshift, and not a weapon of home growth, the form of the paddle in this part of Australia being no doubt derived together with the outrigger canoe from New Guinea. The transition between the paddle

Stick paddles.

Spear paddles.

and club or glaive is well traced in the series of specimens from Solomon Isles, arranged under the head of "Ornamentation" upon the north wall. Three forms of paddles are used throughout the greater part of the Polynesian Islands, one with a long slender point, the blade of which resembles a spear-head, with a plain loom, Nos. 540 and 541, Fig. 67; this is used in New Ireland, Samoa, and the Friendly Isles. The other is represented by No. 542, Fig. 68, with a slender and pointed or leaf-shaped blade, having a cross-handle which is held by one hand at the loom end, and is used in Solomon Isles. These cross-handles are also used throughout North and South America, No. 557 and Fig. 69. The third form is that represented by No. 551, Fig. 70, with a broad blade approaching more to the circular form than the last, and only slightly pointed. This is used in Austral Isles, in the Kingsmill Isles, and in Marquesas. In the Low Archipelago, and in Marquesas, they also use a curved back paddle, No. 552, having a slight knob at the point of the blade the faces of which are at right angles to the blade itself, and this knob develops in some specimens into the form represented in No. 553, which also is from Marquesas. The object of the oval knob appears to be to give weight to the point of the blade, and to prevent it from turning in the hand, and diverging along the line of least resistance, which from its having no cross-handle to keep the blade square with the line of pressure, it is liable to do. Capt. Wilks says these paddles are different from those of Tahiti; and Ellis describes the Tahiti paddles as having a smooth round loom, and an oblong blade. The North American paddles of the north-west coast, have invariably cross-handles like the Solomon Island specimens; and are either pointed in the blade, like No. 557, Fig. 69, or oval and club-shaped, like those already referred to upon the north wall, arranged under the head of "Ornamentation." The South American paddles of Demerara and the Amazons have also cross-handles, but the form of the blade approaches to the European oar-shaped blades, only broader at the end, Nos. 558 and 559. They are often elaborately painted. The Brazilian paddle, No. 560, has also a cross-handle with a more circular blade. A double paddle having a blade at both ends of the shaft, so as to be used by a single paddler alternately on the right and left of the canoe, thereby obviating the necessity of bringing the blade over the canoe, which is necessary when paddling singly with an ordinary paddle, is used by the Esquimaux, and by the islanders of the Sooloo Archipelago, which is situated between Borneo and the Philippines,

Polynesia.

North America.

South America.

Double-bladed
paddles.

and probably it is used in other parts of the Malay Archipelago. Between these and the Esquimaux paddles I am unable to trace the slightest connexion, and it appears probable this form has been independently introduced owing to its very obvious advantages in saving the labour caused by shifting the same blade over from side to side. No. 567 is a small double-bladed paddle of this description, probably unfinished, which I have not been able to assign to any particular locality, it will be seen that the two blades are not exactly in the same plane. The double-headed clubs, Nos. 565 and 566, Fig. 71, probably from New Ireland, appear to be derived from the double paddle. A nearly similar implement often elaborately carved is used by the fuglemen in the New Zealand canoes to beat the time for the rowers when paddling together simultaneously, as their custom is. The double-headed Easter Island club, No. 568, used in their dances, has no doubt its origin in the same source. The peculiar ornamentation on these Easter Island paddles has been traced by Mr. Park Harrison, following out the idea of sequence suggested by some of the specimens in this collection, to a conventionalized representation of a human face. The New Zealand paddles are invariably of the long, pointed, spear-like form, often elaborately ornamented; they are distinguished by the peculiarity of having the face of the blade, which is presented to the pressure of the water, somewhat advanced beyond the line of the loom. The New Zealanders sit with their faces to the bow in paddling, as do almost all savage races without exception, and this practice has even continued on some of the rivers in Ireland to the present day. The practice of keeping stroke in paddling also prevails in New Zealand, Fiji, Society Isles, Gambia Isles, and throughout Polynesia. There can be little doubt that this custom would suggest itself independently to any race of maritime people, owing to the saving of labour effected thereby; and the existence of this habit cannot, therefore, be regarded as evidence of connexion. It would, however, be of some psychological interest to trace the distribution of this custom, implying as it does, a certain advance in organised discipline amongst the races that have adopted it.

New Zealand.

Africa.

No. 555 is probably from some of the Malay Islands, it has an oar-shaped blade, and the cross-handle is carved to fit the fingers of the hand. African paddles being usually employed upon rivers and inland waters, appear to be generally of oval form, rounded at the end. Nos. 563, 564, Fig. 72, however, from the Gaboon, West Africa, are circular in the blade, and are furnished with a point at the extremity.

65 66 67 68 69 70 71 72 73

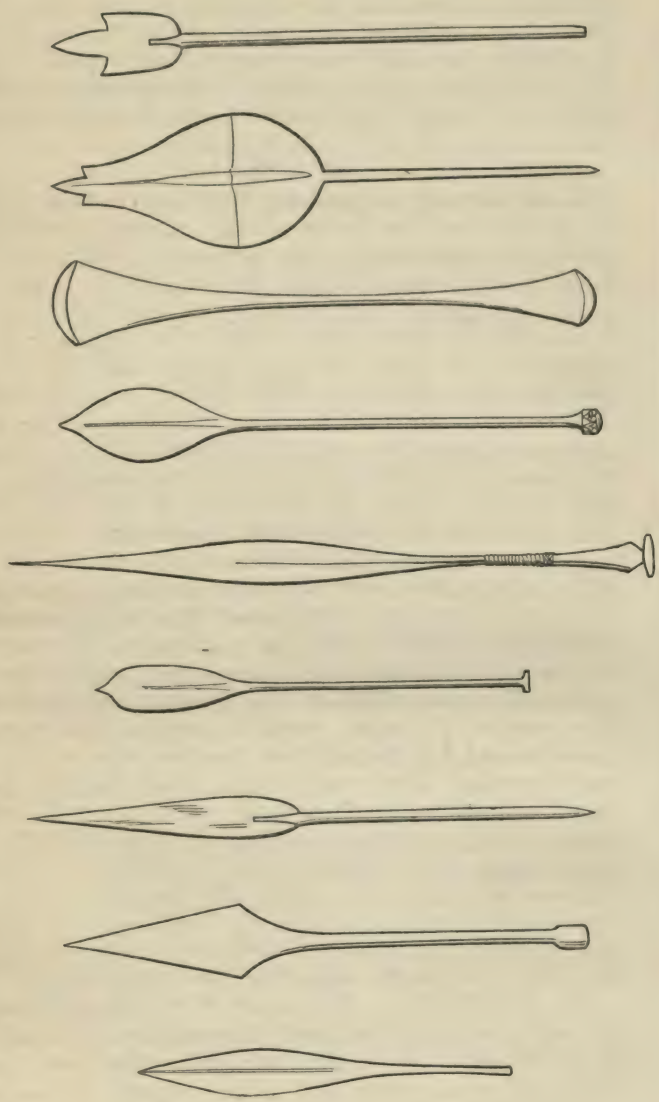


PLATE VII.



No. 564A, Fig. 73, is a lagoon paddle from West Africa, in which the point at the end is enlarged, showing that there is probably a sequence in the form of these blades, the origin and uses of which it might be of interest to investigate. The different modes of navigation employed by savages will form the subject of a separate section. No. 568A is an ancient Peruvian paddle or club, with the blade developed on one side only; it was found in a grave at Pacha-Camac, Peru.

SCREEN 17.

536, 537, Fig. 65. CLUBS of paddle form from the Solomon Isles, similar to No. 488.

538, 539. PADDLES of nearly the same outline as the last but thinner in the blade, painted, and having cross-handles, inlaid with mother-o'-pearl, representing canoes. Solomon Isles.

540, 541, Fig. 67. LEAF-SHAPED PADDLES, New Ireland, more pointed than the last, without cross-handles, the blade of spear-shaped form.

541A. PADDLE, New Ireland, of the same form as the last with fragments of a human figure carved on the blade.

542, Fig. 68. Leaf-shaped broad-bladed PADDLE with cross-handle, of white wood. Solomon Isles.

543. PADDLE of white wood, with a slender pointed blade and cross-handle. Solomon Isles.

543A. PADDLE of white wood, with broad pointed blade and cross-handle, ornamented with chevron and coils.

544, 545. Small PADDLES with pointed blade. New Zealand.

546. New Zealand PADDLE of similar form to the last, but larger, and with a curved stem.

547. PADDLE of similar form from New Zealand, ornamented with a spiral indented groove round the stem and curved grooves on the blade, the shape of the knob at the end of the loom is unusual.

548, 549. PADDLE, New Zealand, with carved handles.

550. PADDLE with broad blade and long stem, ornamented with human figures on the handle. Marquesas.

551, Fig. 70. PADDLE of similar form to the last, but smaller and elaborately carved. From High Island in the Austral Isles.

552. PADDLE, the blade of which is curved backwards, having a small knob at the point of the blade. Marquesas or Low Archipelago.

553. PADDLE of white wood in which the knob at the point of the last specimen has developed into a kind of oval projection with sharp edges to cut the water, and the sides at right angles to the blade of the paddle.
554. PADDLE with broad and rounded blade and long handle, bound with grass, and a knob at the end of the loom. Marquesas.
555. PADDLE with oar-shaped blade, carved with a representation of a human figure, and having a cross-handle, which is carved with indentures, so as to fit the hand. Probably Malay.
556. Long PADDLE with cross-handle. South America.
- 557, Fig. 69. PADDLE with long slender point and a cross-handle. North-west coast of America.
558. PADDLE with broad end and a cross-handle, painted yellow and black. Demerara, South America.
559. PADDLE of similar form to the last, of white wood. South America.
560. PADDLE with broad circular blade and cross-handle, painted black with yellow flowers on the blade. Brazil.
561. Club-shaped PADDLE. New Ireland.
562. Small steering PADDLE, in the shape of a fish's tail. From some part of the South Sea Islands.
- 563, 564, Fig. 72. PADDLES with circular blades and pointed ends. Gaboon, West Africa.
- 564A, Fig. 73. Lagoon PADDLE of somewhat similar form, obtained by Sir Henry Denham from West Africa.
- 565, 566, Fig. 71. Double-headed CLUBS or PADDLES. Probably New Ireland.
567. Double-bladed PADDLE, probably unfinished. Locality not known.
568. Double-bladed paddle-shaped CLUB, used in dances in Easter Island.
- 568A. PADDLE, club-shaped, the blade on one side only; found in a Peruvian grave at Pacha-Camac by Consul Hutchinson in 1873.

SCREEN 18.

STAVES.

569. STAFF of Dinka tribe, White Nile. Obtained by Mr. Petherick.
570. STAFF ornamented with a giraffe's tail. Djour tribe, White Nile. Obtained by Mr. Petherick.

571. STICK used at the present time by the sheiks in Egypt, in form resembling those represented in the ancient Egyptian sculptures.
572. STAFF of antelope's horn. African.
573. STAFF inlaid with an ornamental pattern in ivory, with a hook to enable it to be carried in the girdle. Egypt.
574. STAFF, the head of which is carved in the form of two balls. South-east Africa.
- 575, 576. Carved Caffre STAVES.
577. STAFF with round ball head, the stem carved in spirals. Central Africa.
578. STAFF. Marquesas.
579. STAFF, Society Isles, ornamented with the conventionalised form representing an animal's head and body peculiar to these islands.
580. STAFF, carved all over with the pattern peculiar to New Zealand.
- 580A. Carved STICK belonging King Haki, New Zealand. Obtained by Sir H. Denham.
- 581 to 587. STAVES painted and ornamented in red, black, and yellow. Ceylon.

SPEARS, JAVELINS, AND ARROWS.

Next to the club, the spear must be regarded as one of the most primitive weapons. Whether the javelin or the hand spear can claim priority we have no means of determining; but we find it used as a missile at the present time amongst the most primitive races. Indeed the hand spear used for thrusting only, appears rather to have been the exception than the rule in an early condition of culture. Klemm, in his valuable work on primitive weapons, already quoted, says that it was not used for throwing in Tasmania; this is, however, a mistake, for though the throwing stick is not used in this island, Mr. J. E. Calder says it was thrown with great force and precision by the hand, having a range of about 60 or 70 yards. It is a long, thin, pointed stick, like the Australian spear of the hard heavy tea tree; but I should be inclined to doubt the range from the hand alone being so great as stated above. Nos. 590, 591, are Tasmanian spears. Throughout Australia the spear is thrown by means of the Wammera or Wummerah, as already described. Nos. 588 to 605 are Tasmanian and Australian spears, the latter used

Use of fire.

with the throwing stick in different parts of Australia. They consist for the most part of plain rods as they are cut from the tree from $\frac{1}{2}$ inch to $\frac{3}{4}$ inch in thickness, and 6 feet to 9 feet in length. "In the construction of these," says Mr. Oldfield, "there are minute differences scarcely apparent to Europeans, but a native at a glance is able to declare to what tribe belongs any spear that may be shown him if it has been fabricated in a neighbouring country, or in the event of its being from some very distant part, he can at once vouch for the fact. In the construction of the spear much time and labour are expended, for as it seldom happens that they can procure sticks sufficiently straight for the purpose, they are constrained to take those best adapted to form the weapon in question, and then to exert their skill and ingenuity in fashioning them properly. Having procured a number of passably straight sticks the native returns to his camp, and by means of a sharp flint fixed to the end of his Dowak removes the bark and knots. His next care is to remove the bends which most interfere with its efficiency as a spear, and to this end he carefully examines the stick to find the greatest bend, and this discovered he buries that part in hot ashes, and when thoroughly heated, removing it from the fire, he bends the stick in the required direction, again returning it to the ashes and again repeating this operation of unbending it until the twist is removed. At each fresh essay he tests his spear by a peculiar jerk, causing the stick to vibrate or rather to undulate throughout its entire length, and it is not until this vibration is perfectly even that he considers his weapon perfect. This perfection attained, he next proceeds to point it, the only tool for this purpose being the flint above mentioned. If intended for fishing he affixes two barbs just below the point of the spear by means of the tail sinews of the kangaroo, neatly finishing off his work with a coating of *Tyalo*, the prepared gum of the *Xanthorrhæa*." From this account we see that fire probably formed quite as important an element in the workshop of the pre-historic spear-maker as in that of the blacksmith of our own day. The description given by Sir Edward Belcher of the manner in which the Esquimaux form their arrows accords almost exactly with the account of the Australian mode of proceeding quoted above. "The arrows," he says, "are not made, as one would imagine, from the straight grained timber that could be met with, but from that which happens to be present on the beach ;

“ they are straightened in the following manner. Having shaven the shaft to nearly the thickness required it is then bound round with the finest shavings in a spiral direction. It is then immersed in water and held over a fire of live coals, wetting it repeatedly with water until they deem it sufficiently steamed. Held by one end, it is evident from the spiral mode of binding it may be instantly slipped through and disencumbered of its covering. It is then bent into shape with a tool adapted to the purpose and brought into the required straightness. The chert head being duly shaped is inserted in the point and bound on with deer sinew, which also performs the duty of securing the feathers to the butt by its glue-like as well as its contractive powers.” Klemm also says that the Abipones of South America straighten their lances by heating them in the fire.

With fire the savage also hardens the points, to enable them to pierce the objects against which they are thrown, Points hardened in the fire. When Dampier visited New Holland in 1688, in lat. $16^{\circ} 15'$, he found the natives armed with lances, the points of which were hardened in the fire. Klemm says the spear point of the Tasmanian lances were hardened in the same manner. The Outanata of New Guinea are said to employ the same method of hardening their spear points. Glass, in his history of the Canary Isles, says that the points of the spears and edges of the swords made of pitch pine were hardened in the fire. In the account of the expedition to Virginia sent out by Raleigh in 1584, spears hardened in the fire are spoken of; and Columbus, when he discovered San Salvador, found the same method employed there. According to Stevens the defenders of Copan hardened the points of their wooden spears in the fire. Ovalle, in 1649, mentions the same process in Chile; and Nieuhoff, in 1640, describes it in Brazil. The Germans are also described by Tacitus as employing the same method to harden their wooden spears.

This process appears to have answered the purpose sufficiently well in cases where rods of homogeneous wood were employed as spears, but the difficulty of obtaining them sufficiently straight for the purpose would lead to the use of long straight cane and bamboo poles for spear shafts, and in order to render these effective it was necessary to arm them with hard wood points or points of flint, bone, or other trenchant materials. The use of these hard heavy woods for spear points was also found to be useful in missile spears by weighting the fore part, and thereby causing them to fly more truly in the line of aim, and this led to the Fore shafts.

expansion of the wooden point into a long fore-shaft, extending from one-fourth to one-third of the whole length of the spear, and these fore-shafts were again tipped in some cases with flint or bone. Spears with fore-shafts do not appear to be used in Australia, except in the northern and western parts. Nos. 596 and 597, Fig. 74, are examples, of this kind of spear, from Cape York, North Australia. Klemm speaks of their being used in the neighbourhood of King George Sound, in Western Australia, where the fore-shaft is fastened on with resin, and they are more neatly finished than in other parts. Spears or arrows with hard wood fore-shafts are used in most parts of the Melanesian and Polynesian isles. Nos. 606 to 611 are spears of this class, probably from Australia. The spears thrown at Captain Cook's party in New Guinea are described as having points of hard wood. Nos. 627, 628, 629, 636, 637, are examples of spears with fore-shafts from New Guinea. At Mallicolo, New Hebrides, Captain Cook found arrows in use which were sometimes armed with long sharp points of hard wood. Nos. 662 and 663 are arrows of this description, from Solomon Isles; No. 668 from Santa Cruz; No. 667 from the island of Ombai, Asiatic Isles. Dr. Mouat says that the Andaman arrows are in two pieces. No. 669 is from Torres Straits, and No. 670 are arrows from New Guinea, similarly constructed. In the collection recently brought home by Captain Markham, R.N., and exhibited at the Geographical Society, arrows of this description were obtained from the islands of Nukapu, Swallow Group, Santa Cruz and Espirito Santo. Williams describes some of the Fiji arrows as being armed with a fore-shaft of a kind of wood, which bursts when wet, so that it can with difficulty be extracted from a wound. In the Friendly Islands the arrow used with the grooved bow already described, has a long reed shaft with a short wooden point of hard wood. Turner describes the Samoan arrows as being made of reed 3 or 4 feet long and pointed with hard wood. Ellis says the Society Island arrows are of bamboo with a fore-shaft of Aito or iron-wood, pointed not barbed. No. 672 from the Sandwich Islands are of this construction. Nos. 678 and 680 from South America are similarly formed. Nieuhoff, in 1640, describes the Brazilian arrows with fore-shafts of hard wood. Klemm says the lance of the Cocamas, which they throw with great accuracy, have fore-shafts of Chonta wood. The Tienas, Encabelados and Chunchos have also arrows and lances of the same construction. The arrows of the Indians of Virginia

are also described in 1606 as being similarly constructed with hard wood points. In Africa the use of iron having been introduced throughout the continent previously to any contact with Europeans in modern times, wooden fore-shafts are of rare occurrence. No. 691 from the interior of West Africa, and No. 692, said to be from Zanzibar, are, however, exceptions to this rule, and appear to be survivals from a period when wood instead of iron was used for this purpose. Both are tipped with iron points. No. 696, the Bushman's arrow, described by Thurnberg, has also a fore-shaft of bone, which is tipped with iron. In other parts of Africa iron is used, but it is frequently formed into a long fore-shaft, evidently in imitation of those of wood. Nos. 688, 689, from the White Nile, the Neam Nam lance, No. 762. Some of those from the Fan negroes of the Gaboon, Nos. 727 to 758, as well as some of the Caffre Assegai, Nos. 772 to 786, are examples of this; and the forms of all are essentially pre-metallic in character, as we shall see when speaking of the long pointed barbs with which many of these iron shafts are furnished throughout their length. The Roman *Pilum*, and the Frankish *Angon* were of the same construction, having a long iron fore-shaft.

In the northern region of pine forests, where hard heavy wood is not easily procurable, the arrows are usually in one piece. By an illustration from Klemm's work it appears that the arrows of the Tungusians and Samoides of Northern Asia have a shaft of pine in one piece with bone points. Those of the Esquimaux, No. 681, are usually in a single piece with the bone or chert head attached to the end, but in some cases a short bone fore-shaft intervenes between the pine shaft and the head. In California and the greater part of the North American continent the arrows are similarly constructed, some few only having bone fore-shafts plain or barbed; but in no case have I come across a fore-shaft of hard wood. The shafts of the arrows of the North American Indians are peculiar from having a grooved line along their length, on one or both sides, impressed with the point of some sharp tool; the meaning of this is not clearly understood by the natives who use them. It has occurred to me that it may possibly represent the string of sinew which in some of the harpoons of the Northern Indians is seen passing down the shaft from the binding at the head to that of the feathers. Nos. 684 and 685, Fig. 75, show this grooved line on the shaft.

In like manner the arrows of the Persians, Hindoos, and Chinese, are of one piece with iron or steel heads.

Barbs.

The use of barbs upon the sides of the spear and arrow points is as widely distributed as that of the fore-shaft. In Australia this is effected by binding on with sinew or grass a small leaf-shaped barb of wood represented in Nos. 598 and 599, Fig. 76, or a piece of bone is fastened on obliquely to the point so as to supply both point and barb in one, as in No. 596, Fig. 77. Mr. Oldfield says that when used for fishing two barbs are fixed on just below the point of the spear, by means of the tail sinews of the kangaroo, and covered with a coating of the *Tyalo*, the prepared gum of the *Xanthorrhœa*. This is also mentioned in Cook's voyages. These barbs are sometimes carved out of the solid piece, as in No. 604, and described by Mitchel in lat. 37° long. 142° . In some instances a row of sharp flints or quartz flakes are fastened with gum along one side of the point, specimens of which are shown under the head of hafted implements, and also in No. 602A, Fig. 78. These rows of flakes are imitated in carving, as may be seen in No. 600, Fig. 79. Captain Owen Stanley speaks of the spears in New Guinea being variously barbed on one or both sides near the head, and this is confirmed by Captain Cook's account. Nos. 628 and 629 are of this class from New Guinea, having clusters of sharp barbs bound on with yellow and red grass. Nos. 640 and 641 are spears similarly barbed from Solomon Isles. Cook also found the arrows at Mallicollo carved with small prickles to prevent their being drawn out of the wound. Nos. 612 to 623, Fig. 80, are spears with large barbs carved out of one piece, apparently constructed to represent the hanging foliage of a pine; they are used both in the Fiji and Friendly Islands, and are, no doubt, intended to represent by their drooping barbs the *Araucaria excelsa* or Norfolk Island pine, which abounds in these regions; it is a most majestic tree, growing to a height of from 160 to 228 feet, with an erect stem sometimes 30 feet in circumference. These spears consist, however, of a great variety of patterns all of which are connected in form. No. 624 shows the same form of spear converted into a club. The New Zealanders used a barbed spear of nearly the same kind elaborately carved, and like some of those from Fiji, having barbs pointing both forwards and backwards; but they are no longer employed in New Zealand. Ellis speaks of the jagged spears of the Samoans; and Beechey says the spears in Serle Isle are similar to those of the Friendly Isles. Williams gives an illustration of a multi-barbed spear from Rarotonga. Multi-barbed spears

are used in the Hervey Islands, and in the Sandwich Islands, Ellis speaks of the pointed and barbed spear called *Kawira*. The long spines of many trees, such as the Mimosa, the North American Acacia, the Gleditchia and the Agave afford materials not only for the barbs of lances but serve also as awls, needles, and many other purposes in an early stage of the arts. The arrows of the Botocudes of South America called *Uagicke Nigmeran* have 11 barbs; those of the Chunchos have five barbs on one side; and those of the Arowaks seven barbs on one side. Some of these may be seen in the series Nos. 679 and 680, Fig. 81. Fig. 82 is a barbed arrow from New Guinea. The Esquimaux bone-pointed arrows have also barbs carved in the bone on one or both sides. In Africa Petherick describes the barbs of the arrows of the Dor and other tribes on the White Nile, Nos. 688, 689, Fig. 83, &c. Burton speaks of the barbed arrows of the Wazaramo; and Grant describes those of the Madi. In Denham and Clapperton's travels an illustration is given of those of Central Africa, which resemble as nearly as possible the arrows of the White Nile. All these are clearly constructed in imitation of the barbs of thorns and spines bound on to the wooden fore-shafts used by people in a less advanced stage of culture, and are explained by those represented in this collection of wooden and cane-pointed arrows from South America and New Guinea. Amongst classical authors barbed arrows are always attributed to barbarism, and their use is generally condemned by them. The Sauromatæ, Getæ, Servii, Scythians, Arabs and Moors are mentioned as employing arrows of this description. By the term barbed is here meant weapons with sharp spikes bound on or carved upon the blade, and not arrow heads of the form usually known as the broad arrow; these will be described more particularly when we come to treat of arrow heads in the pre-historic series.

The arrow is the diminutive of the lance, and is for the most part similarly constructed. In most countries the fore-shaft, as already mentioned, served the purpose of giving weight to the fore part, and thus preserving the shaft of the arrow more truly in the line of flight in consequence of the resistance of the atmosphere; but to effect this more certainly, feathers are sometimes bound on to the butt end; feathers of leaves are used for this purpose amongst the Fan negroes of West Africa, No. 697, by the Digaroo Mishmes of Assam, No. 720 to 722, and leaf feathers are also seen upon the arrows No. 674, which

Feathers.

are said to be from Gulf Island, Solomon Isles; but birds' feathers are more usually employed for this purpose. The influence of inherited custom is shown in the distribution of arrow feathers, and by the fact that there is a considerable area of the globe in which arrows are used without feathers. They are not used in New Guinea, in New Hebrides, Solomon Isles, Sandwich Islands or any part of the Pacific that I am aware of; they are found in their most primitive state amongst the Esquimaux, where they are laid on flat upon the arrow with both sides of the feather retained as it came from the bird, as shown in the Esquimaux series No. 681 and described by Frobisher in 1576. In most other parts of the world, one side of the feather is stripped off and the other set on to the arrow edgewise; this is the case in North and South America generally, but in some of the Californian arrows, represented in the series No. 684, a vestige of the former practice may be seen, where a part only of one side of the feather is stripped off and laid on edgewise, both sides of the feather being retained at the other end and laid on flat. Some of the South American feathers are also laid on flat with both sides of the feather preserved as amongst the Esquimaux. The Arowaks have no feathers to their arrows, but most of the other tribes use very large feathers set on spirally so as to give the arrow a rotatory motion in the air, and thus increase the accuracy of flight in the same manner as a bullet shot from a rifle. This method of placing the feathers was practised in Europe, and was known in Italy by the term *Vireton* (Fairholt's Dict. of Terms in Art). Feathers are used by the Tungusians, Samoides, by the Turks, Hindoos, Chinese, and throughout Asia; in Europe arrows were invariably feathered. In Africa feathers are not generally employed the heavy iron fore-shaft serving the purpose of keeping the point forward. Nos. 692, said to be from Zanzibar and No. 691, are, however, exceptions to the rule. The iron heads of the arrow in many parts of Africa are grooved in a way to give a rotatory motion to them, thereby obviating the necessity of feathering the shafts; the subject of these spirally grooved arrow heads will be treated separately. Bosman, speaking of the arrows of the Aquamboe on the Gold Coast, says, "these arrows have feathers at their head and are pointed with iron." It would hardly appear likely from this passage that he refers to the spirally grooved iron arrow points that are used in this region. No. 709 are two arrow points from some part of India feathered in this manner close to the head.

The notch at the end of the arrow, to keep it upon the string whilst firing, is such a simple contrivance that it might have been supposed that it would suggest itself naturally to any of the savage races by whom the bow was used. Yet in some places the arrow marks its descent from the spear by the absence of a notch. In the Society Isles the employment of a piece of gum at the end of the arrow to keep it upon the string whilst shooting is a clumsy contrivance requiring the use of a foreign substance not always at hand, and proving that the simple idea of notching the end of the arrow for this purpose could not have been thought of. In New Guinea the majority of the arrows have no notch, and in those which have, it is so slight as scarcely to be perceptible. Some of those from Solomon Isles are notched, whilst others are without the notch. The arrows from Santa Cruz are notched; the arrows from Gulf Island, Solomon Isles in this collection are without the notch, as are those from the Sandwich Islands. In South America some of the long arrows are without the notch, and others are but slightly notched; the notch is used by the Esquimaux and throughout North America, Europe, and Asia; it is also used throughout the greater part of Africa, but some of the Mandingo arrows in the series No. 687 are not notched. The very prominent spiral of the heads of these arrows must give the arrow a rapid twist even before it leaves the bow, and this may account for the absence of the notch in these arrows which would impede the rotation. Arrow notch.

The use of poison upon the points of weapons may be traced over a large portion of the globe. Whether the custom arose from one or more centres it may now be impossible to determine, but the fact of many different poisons being used in different localities, is not in itself a proof of independent origin. When we find that poison is not used either in Australia or New Guinea, we may be certain that it was not motives of philanthropy but ignorance that was the cause of this. Turner says that it is used in Vate, New Hebrides, and Captain Cook found what he believed to be poison upon the arrows at Mallicolo; the sailors, however, tried it upon a dog and found that it produced little effect. If it was used in these islands it was no doubt derived from the Malay Archipelago with the bow; but modern voyagers deny its existence anywhere in the Polynesian Islands, and whether it was really in use formerly appears somewhat doubtful. It was formerly used in war in the Malay Archipelago, Poison.

and is still used in killing animals. The poison is taken from the Upas tree; it is however very weak, and would not probably be effectual in killing a human subject once out of ten thousand times. Mr. Crawford says that the Balinese are the only people who retain the practice of poisoning arrows in the Malay Archipelago, all the others have given it up on account of its inefficiency. According to Père Bourien the wild tribes of the Malay Peninsula use a poison called *Hipobatang* obtained from a tree, which is very fatal to animals; monkeys, squirrels, and birds die from its effects in two or three minutes. Its effect is doubtful upon man; the savages do not trouble themselves to cut out the place before eating the animal as in the case in the Malay Archipelago. Muhot says the Stiens of Cambodia poison their arrows when hunting the rhinoceros or large animals, the smallest puncture kills, and the largest animal after being wounded seldom has the power to go more than 50 paces before it falls. Poison is also said to be used in Bootan. It is employed almost everywhere by the Indians in South America. Humbolt says the Otomacs of Guiana use the thumb-nail as a weapon poisoned with curare, which is made from a climbing plant, the effect is to take away the power of voluntary movement, whilst the involuntary functions of the heart and intestines still continue. Sir R. Schomburgh describes the poison of the Maopityans, which is a preparation made from a plant. It is not strong, nor does it preserve its quality so long as the *curare*. Condamine says that the poison of the Yameos kills directly, and that the antidote is salt, but sugar is of safer dependence. Klemm says poison is used in Paraguay, Brazil, on the Orinoco, and in Mexico, and that no less than 30 different kinds of roots are used. It is also used by the Darien Indians, by the Catauixis, the Cataquinas, and the Yucanas. The Mayorunas or Barbudos, lying between the rivers Ucayali and Yavari, use the most powerful poison of any. The Xebaroe Indians use the *ticoona* poison, which is stronger than the *urari*; wounds from both are cured by the application of salt. In North America, Schoolcraft says that poison is used by the Shoshones. It is not used by the Esquimaux. The Scythians and Parthians used it in ancient times, and it is always spoken of by the ancient European authors as a barbarism. It is employed throughout Africa. It is used by the Bushmen upon the small arrow with the lancet-shaped head already mentioned. According to Livingstone the Bushman's poison is made from the entrails of a small caterpillar called *ngwa*; a very small

portion introduced into a scratch acts like morbid matter in dissection, but the agony is so great that the person wounded becomes a raving maniac and flies from human habitations. Its effects on the lion, which they are in the habit of shooting with these arrows, are no less terrible, and lions have a great dread of Bushmen in consequence. Both vegetable and animal poisons are said to be used. Of the former the juice of the bulb of the *Hæmanthus toxicarius*, the gum of the *Euphorbia*, and the nuts of a shrubby plant, called by the colonists *Woolf-gift*, are the ingredients usually employed. The animal substances are fluids found in the fangs of venomous serpents, as the little horned snake, the yellow snake, or the South African cobra. These the Bushman uses as he is able to procure them, not all together. The Bushmen cure a poisoned wound by rubbing fat into it, and explain this mode of treatment by saying that the *ngwa* wants fat, and if it does not find it in the body, kills the man. Thurnburg says that the Hottentots, in order to render themselves proof against poison, allow themselves to be gradually bitten by scorpions, serpents, and other venomous animals until they get accustomed to it. The urine of a Hottentot thus prepared is also drunk as an antidote. Barbosa says that the Arabs of Mogadore poison their arrows. Anderson, in his account of the Okavango river, says that one of his attendants, a woman, died after 36 hours' intense suffering from the effect of a poisoned arrow shot by a Bushman. Du Chaillu describes the poison of the Fan cross-bow arrow as being made of the sap of a plant into which the arrows are dipped, and it is allowed to soak thoroughly into the wood. It gives the tops of the arrows a red colour, and the slightest scratch kills. Poisoned arrows are used in Benin according to Bosman, but not upon the Gold Coast. Burton speaks of the poison of the Wazaramo. Petherick says the poison of the negroes on the mountains of Farzogl, Central Africa, consists of the white milky juice of the *Asclepias procera* palm, which in Egypt is a mere shrub, but a tree in Kordofan. Grant says the Wanyambo poison their arrows, but the people of Karague seldom or never, nor is it used by the Madi. Denham and Clapperton saw poisoned arrows used by the Felatahs. Some of the horses wounded with it died immediately, others lived till next day. Immediately after drinking they dropped and died instantly, the blood gushing from the nose and mouth. Several of the men died in the night of the day after being wounded, the bodies becoming instantly swollen and black. One of the chiefs who was

wounded appeared to be but little affected for some hours; when riding at Denham's side he suddenly fell off his horse and died immediately. The Munga have a more fatal method of poisoning than the Felatahs. Barth says that in the neighbourhood of Agades he saw the plant called *Kam-kummia* an *Euphorbia* growing, with the sap of which the negroes poison their arrows in many parts of Central Africa. He also mentions the *Bijage* as a tree from which poison is prepared. The antidote employed at Kano for a poisoned wound is to boil a very young chicken with the fruit of the *Chamsinoa* (*Balanites*) and the Tamarind tree, and the bitter decoction obtained is carried in a small leather bag ready for use. The chicken, he says, is added only as a charm.

Detached
heads.

In some instances the heads of poisoned arrows are constructed to detach themselves from their shafts and remain sticking in the wound like the multi-barbed stings of insects, especially that of the bee, which is so constructed that it cannot usually be withdrawn, but breaks off with its poisonous appendage into the wound. In the arrows of the Bushmen the shaft is sometimes partly cut through so as to break off when it comes in contact with a bone; and the thin metal barb is also constructed to remain in the wound when the arrow is withdrawn. The arrow heads of the Shoshones, of North America, said to be poisoned, are tied on purposely with gut in such a manner as to remain when the arrow is withdrawn. The barbed-wooden heads of the poisoned Macoushie arrow of South America, No. 816, Fig. 84, is inserted loosely into the socket of the shaft so as to detach from the shaft in the wound. These detached heads have no doubt led to the use of the fishing harpoon to be described hereafter.

Bird bolts.

The use of bird bolts remains to be considered. Scattered amongst the collection of arrows from different countries will be seen a certain number of arrows with blunt points; these are intended to stun or knock over birds and animals without injuring their skins, a matter of importance to the savage, who is dependent on skins for his clothing, and on the feathers of birds for the ornaments with which his clothing are decorated. Such arrows may be seen in the series No. 681, from the Esquimaux, Fig. 85; No. 699 from India; No. 702 from Persia; No. 719 from the Malay Archipelago. The bone head of the Bushman's arrow, No. 696, is made blunt at one end and pointed at the other, so that it can be easily reversed and used for either purpose as may be required. Blunt bird bolts are also exhibited on the screen with the Genoese cross-bow. Wallace mentions their use in

the Malay Archipelago. Captain Postans, in a paper read before the Ethnological Society, says that the Biluchi knock down winged game with blunt-pointed arrows; and Regnard, in 1681, says that the Laplanders use blunt-pointed arrows to knock over ermines, martins, and other animals, whose skins they wish to preserve. Klemm says that the Arowaks use a blunt-pointed arrow for animals when they wish to stun them or take them alive; and Schoolcraft speaks of the blunt-pointed arrows of the Algonquins called *beekwuk*. Various forms of arrow and spear heads are used for different purposes and for the different kinds of animals that are to be killed. Thus the Persian and Hindoo carries in his quiver arrows with different sorts of heads, some chisel shaped, others barbed or semi-barbed, and others with plain points. These will be noticed more particularly in treating of the pre-historic arrow-heads of flint discovered in the soil. The Botocudos and the Arowaks, according to Klemm, have three sorts of arrows; the large reed blades are used for large animals, and the notched or saw-edged blades for animals of smaller size. The iron-headed spears of the Fan negroes, Nos. 727 to 758, are arranged from left to right to show the gradations between all the different forms that are used by those people, commencing with the leaf-shaped on the left and passing into the lozenge-shaped, triangular, and barbed. The series Nos. 790 to 799 also shows the varieties of spears used by the Hausa of Central Africa, a gradual elongation and narrowing of the blade is seen until it resembles a leaf-shaped sword blade attached to the end of the spear like the Thracian *romphea* and the European *partisan* of mediæval times. The series of Nagah spears, Nos. 827 to 830, exhibits varieties similar to those of all savage races. No. 827 has only a rudimentary barb, the others have one, two, and three pairs of barbs respectively, and the pattern of their barbs being but ill adapted to the purpose of fixing the weapon in a wound, must evidently be a conventional form derived from some more primitive weapon of which the history is lost. The whole culture of the Nagahs indicate a connexion with that of the Dyaks of Borneo, and it is possibly to that source that we may look for an explanation of many of their customs. Nos. 834, 835, and 836, Figs. 86 and 87, are Japanese spears, the heads of which are convex on one side and concave on the other; these are survivals in metal of weapons armed with bamboo points. The concave side represents the hollow interior of the bamboo, examples of which may be seen in the cases of arrows from South

Forms of spear
heads.

America and New Guinea. In No. 836 the concavity is reduced to the dimensions of a narrow groove on the side of the blade.

Hand and missile spears.

If the spear in its most primitive state is used as a missile, as has already been mentioned, it is certain that in its latest form it is found as a hand weapon. It would be beyond the limits of a note to give a complete history of the weapon in all the numerous varieties in which it is found in the hands of races of every stage of culture, from the most savage to the comparatively civilized representative of it found in the hands of officers and serjeants of European armies during the last century. Two specimens of this are seen in Nos. 994 and 995. As a rule, though not without exception, the leaf-shaped head is used for hand spears to enable it to be drawn quickly out of the wound, whilst the barbed javelin is intended to fix itself and drag either the shield of an opponent or a wounded animal to the ground. The length of an arrow or javelin is of course limited by its weight; but when used as a hand weapon for thrusting, length adds considerably to the efficacy of a spear, not only as enabling the user to reach his enemy at a greater distance, but also, from its giving momentum to the thrust, and rendering it more difficult to parry or twist aside, especially when held in the middle; and when ranks three and four deep are employed, length is necessary to enable it to project beyond the foremost ranks. Those nations which use javelins most commonly carry two of them, one of which is thrown at a distance, and the other retained for close quarters. The spear is used both as a missile and hand weapon all over the Polynesian Islands. In New Zealand a spear 16 ft. long used formerly to be employed, being held in the middle. The Samoans practise throwing the dart so as to strike the ground first, and hit the object by ricochet. They set up a young coconut with the soft base upwards so that the spears stick in it. In Tahiti they throw for practice at the stem of a plantain; but the Sandwich Islanders show greater skill in this exercise. The javelin is used by the Burmese, by the Bedouins in Arabia the *mizrak* described by Burton is used. It is like the Indian iron lances, Nos. 812 to 814, which are used as javelins, but are not allowed to leave the hand, being retained by the knob at the end, as was the case with the ancient Egyptian javelins. Herodotus mentions the use of the javelin by the Massagetæ; and Strabo by the Lusitanians. The Macedonians carried two javelins, as did the Romans, one of which was thrown at a distance and the other

retained for close fight. The *angon* of the Franks was similarly constructed to the Roman *pilum*, and in all probability derived from it. The Anglo-Saxon and Frankish spears were very much alike, and two spears were frequently found in the graves of both. The Germans threw their *framea*, and trusted much to the spear, on which account the Romans with their short swords had the advantage over them when they came to close quarters. The javelin or dart is used by the Fuegians, the Esquimaux, the Tapoyers, and other Indians of North and South America.

The Abyssinians carry two spears, one of which they throw at a distance of 30 or 50 yards, and the other they retain for close encounter. In throwing they raise the hand as high as the shoulder, whilst the Turks in throwing the *jerrid* seldom raise it above the elbow. In throwing the heavier spear they allow it to slide through the hand, but do not let it leave the hand altogether. The spear is used as a missile in nearly all parts of Africa, from the Caffres, Hottentots, and Bushmen in the south, to the Fans on the Gaboon, and the negroes of the Gold Coast, on the White Nile, and throughout Central Africa amongst the Bornouese, Felatas, Bedites, and others, who throw it with effect 30 or 35 yards. Amongst the Shuwa and Surgurte it is known by the name of *Bellem*, a name which appears to point unmistakeably to its connexion with the Roman occupation of northern Africa. The long lances, Nos. 838, 839, used in India are known by the name of *Balam*.

The spear, like the axe, has been regarded by many nations as an emblem of authority, and even worshipped as an idol by some races. It is interesting to trace the process by which spear-worship was introduced into the religious observances of savages, amongst whom nearly every stage in the development of this superstition may be found in existence at the present time. Thus we learn from Denham and Clapperton's travels that the Sultan of Haussa has a slave whose duty it is to run by the side of his horse to carry his spears. Thus provided with a constant supply of these weapons the sultan's spear in the hands of a brave and adventurous leader, would soon become proverbial for power and authority, but in the case of a more timid ruler the use of the spears would devolve upon the slave, who would stand by his master to protect him. In this stage we find the custom represented by the Sultan of Bornou, who has "riding on each side of him, two men called "Meestrumba Dundelmah, carrying immense spears, with "which they are supposed to defend their Sultan in action,

Spear worship.

“ whose dignity would be infringed upon by defending himself; but the spears are so heavily laden with charms, and the bearers so abominably unwieldly, that the idea of such weapons being of any use is absurd.” Here we see the spear already transferred to the regions of the supernatural, and rendered formidable rather by the charms attached to it than by its efficacy as a weapon of offence. It might be expected that a spear of this kind, even after the death of the sultan, should continue to be regarded with dread, and little would be required to convert it into a powerful fetish. Accordingly, we find that amongst the Musgu, the spear is worshipped as an idol, known by the name of *Kefi*. Amongst the Marghi it is also used as an idol, but with different associations; for whereas the Musgu regard it as an emblem of their god, amongst the Marghi the real worship is attached to the sacred locality in which it is preserved. Amongst the minor Yoruban gods in Abeokuta, the *Ogun*, the god of blacksmiths and armourers, is represented by a dwarf spear of copper or iron, and the human sacrifices offered to it are described by Burton. The Bagirmi have another form of the spear-worship: “ Behind the Barma is carried a long spear of peculiar construction, which in the history of the country is said to form a very conspicuous object, having been meant originally to represent an idol, which was transplanted from the parent state Kéngu Matàya, and it evidently,” says Denham, “ bore a great resemblance to the Kefi of the Marghi and Musgu.” From these examples we see that the state weapons carried before civil dignitaries in our own time, actually represent stages in the development of superstitious rites, which under the influence of a culture less advanced, or a religion less pure than that which we enjoy, might become powerful fetishes, or be converted into various forms of idols. We are also enabled by these means to understand how it came to pass that Quirinus was worshipped by the early Romans under the form of a spear, and why the scimeter by the Scythians was regarded as the emblem of their war god. Far eastward in the South Pacific, we find the same custom developing itself, and described in the account given by Commodore Byron of his attempt to land upon Disappointment Isle in 1765. The inhabitants were hostile and opposed their landing. “ Two spears about 16 feet long, were brought down to the shore and fixed upright in the sands, to the top of them they had fastened several things that fluttered in the air,” corresponding no doubt to the charms on the spears of the Sultan of Bornou, “ before these

" they every moment knelt down, invoking, as we supposed, the assistance of some invisible being to defend them against us ; they then set up a yell, pointing at the same time to the spears and poising in their hands large stones which they took from the beach." The superstitious reverence attached to certain Fiji clubs already alluded to, is another instance of the same kind. Northward amongst the western Esquimaux, Captain Beechey records the existence of a similar custom. " Against an obscure point of the cliff, near the village, was a broad iron-headed halbard, placed erect, with several bows and quivers of arrows, and near them a single arrow with a tuft of feathers attached to it, suspended from a rock." Corresponding no doubt, to the charms on the Bornouese spears, and the fluttering emblems depending from the spears of the Disappointment Islanders. " The Esquimaux were reluctant to answer our inquiries concerning this arrangement, and were much displeased when we approached the place. From the conduct of the natives towards Captain Kotzebue at Shismareff Inlet, it is not improbable that the shooting of this arrow may be a signal of hostility, as the natives of that place, after eyeing him attentively and suspiciously, paddled quickly away and threw two arrows with bunches of feathers attached, towards their habitations, whence shortly afterwards issued two Baidars, who approached Captain Kotzebue with very doubtful intentions." An almost exact parallel to this is seen in the proceedings of the King of Narsinga in India, described by Barbosa. " When he intends to make war upon the King of Decani, he goes in procession towards the country of the enemy, and as he goes through the fields they bring the king a horse, on which he rides, and a bow and arrows, which he shoots towards the part which he intends to attack, and they then name the day of his setting out, and the news immediately runs throughout all the kingdom." The civic ceremony still in force in this country and Ireland of throwing a javelin to mark a boundary, has no doubt, its origin in like causes. We cannot suppose that customs and superstitions like these in parts of the globe so widely separated, however closely resembling one another, can be derived from a common source, they must rather have arisen independently as the result of like causes in regions distant from one another. Continuity of ideas we may be certain does exist between the successive stages of every superstition or custom, but corresponding conditions of

external nature and similar constitution, physical and mental in the human race may, no doubt, be sufficient to produce coincidences of this kind, and it is only when geographical continuity can be traced, or appears likely to have existed formerly, that we are justified in ascribing them to a common source.

SPUDS.

Africa.

Spuds at the butt end of lances have a continuous geographical distribution, which makes them of interest in speculating upon the introduction of the art of working iron in Africa. Nos. 800 to 811, Fig. 88, are the objects here referred to. Pointed ends to lances for the purpose of enabling them to be stuck in the ground, are of frequent occurrence, as for example, those at the end of the Zanzibar spears, Nos. 768, 770. And the spears of the ancient Greeks were shod in this way, but the spud is a kind of small axe blade, of varying form and width, affixed to the butt end of the lance. In shape it so nearly resembles the bronze celts or palstaves found in Scandinavia and other parts of Europe, as to suggest the possibility of these latter having been occasionally hafted and used in the same manner. The iron spud is used all across Africa from Liberia on the west to the Bornouese territory in the centre, and the White Nile towards the east. Demmin gives an illustration of two from Abyssinia, though I have never myself seen any from that country. They are used in Madagascar and in the Malay Archipelago. Specimens from all the different localities here mentioned so closely resemble each other, both in regard to the form of the lance and spud as make it probable they must have been communicated from one to the other, and circumstances favour this hypothesis. The connexion between the Malays and the Malagasy of Madagascar is well established. Not only are there a considerable number of Malay words in the Madagascar language, but they have also the outrigger canoe of the Malays and their peculiar form of bellows, consisting of two cylinders of bamboo with pistons of feathers, worked alternately, is sufficient to prove beyond doubt connexion with the Malay Archipelago. This form of spud may therefore have been communicated from Java and Sumatra by means of outrigger canoes blown away to the westward of the south-east monsoon, and have spread from thence over Africa. On the other hand there exists in the Louvre Museum at Paris, an Egyptian spear with a bronze spud

Madagascar.

Malay.

Egypt.

at the end, Fig. 89, exactly resembling in form that seen at the end of No. 809, which is probably from the White Nile or some part of East Central Africa. There is a passage in Deuteronomy, chapter xxiii., which proves the spud to have been used by the Jews. "Thou shalt have a place also
 " without the camp whither thou shalt go further abroad,
 " and thou shalt have a paddle (or spud) upon thy weapon,
 " and it shall be when thou wilt ease thyself abroad, thou
 " shalt dig trenches, and shalt turn back and cover that
 " which cometh from thee." The mode of life here set forth is well represented in the account which Barth gives of the manners of the people of Agades, in Central Africa, at the present time. "The houses in Agades," he says, "do not possess all the conveniences which one would find in houses in the west of Europe, but here, as in many Italian towns, the principle of the 'il per tutto' which astonished Goethe so much at Rivoli on the Lago de Garda, is in full force, being greatly assisted by many ruined houses, which are to be found in every quarter of the town. But the free nomadic inhabitant of the wilderness does not like this custom, and rather chooses to retreat into the open spots outside the town. The insecurity of the country and the feuds generally raging, oblige them still to congregate even on such occasions. When they reach some conspicuous tree, *the spears are all stuck into the ground* and the party separates behind the bushes, after which they again meet under the tree, and return in solemn procession into the town." The Bornouese use the spud for a great variety of purposes, with it they search for water, or dig a hole for a post. In Denham and Clapperton's travels a rather amusing account is given of the uses to which this implement is put. Whilst accompanying the Bornouese army they encountered a violent storm. "We were much amused at the economy of the Shouwas; when the storm approached, I saw all were extremely busy digging holes in the sand with their spears, evidently too small for them to get into themselves, and we were not a little surprised at seeing them presently bury their shirts and trousers two or three feet deep in the sand, which, on the rain subsiding, they dug up and put on, quite dry, with great comfort and satisfaction." No. 801, from Liberia, in this series, is worthy of notice, from its exact resemblance to some of the bronze palstaves in this collection, and from the manner in which it is bound on with iron wire. No. 804 is believed to be Malay, but the Malay spear of this kind so closely resemble Malay.

those from Africa, that it is difficult to distinguish them. The Royal United Service Institution contains similar specimens. Others are in the Asiatic Society's Collection, and one is figured in Meyrick's Ancient Armour. See distribution map on screen.

SCREEN 19.

SPEARS.

WOODEN SPEARS FROM DIFFERENT LOCALITIES.

588, 589. Simplest form of SPEAR, being a plain stick as cut from the tree and pointed, 6 ft. 2 in. and 7 ft. 6 in. in length, and $\frac{1}{2}$ in. and $\frac{3}{4}$ in. thick. Australia.

590, 591. SPEARS of hard dark wood, probably of the tea tree, straight and worked into shape with flints; 7 ft. 4 in. and 6 ft. 11 in. in length, and $\frac{1}{2}$ in. thick in the centre tapering to both ends. Tasmania.

592, 593. SPEARS of red wood, 6 ft. 4 in. and 5 ft. 10 in. in length, pointed, and $\frac{3}{4}$ in. and 1 in. in diameter. Australia.

594. SPEAR of dark wood, 9 ft. 2 in. in length. Australia.

595. SPEAR, consisting of a stick $\frac{1}{2}$ in. thick and 8 ft. 6 in. in length, barbed at the point, and imperfectly straightened. Australia.

596, Fig. 77. SPEAR, 9 ft. long, of which 6 ft. consists of a fore-shaft of hard wood, and the remaining 3 ft. of light wood, pointed and barbed with a piece of bone fastened on with gum and sinew obliquely, so as to combine point and barb in one piece. The shaft has a cavity at the butt-end to receive the pin of the throwing stick. Cape York, North Australia.

597, Fig. 74. SPEAR, 8 ft. 5 in. in length, of which 3 ft. 4 in. is a hard wood fore-shaft about $\frac{1}{2}$ in. thick, and the remaining part of light wood $\frac{3}{4}$ in. thick, with a cavity at the end for the throwing stick. Australia.

598, 599, Fig. 76. SPEARS, 8 ft. 10 in. and 8 ft. 1 in. in length, pointed and barbed with a leaf-shaped piece of wood fastened on obliquely with gum; used with the throwing stick. Australia.

600, Fig. 79. SPEAR, 8 ft. 8 in. in length, more carefully finished than the preceding specimens; in one piece, with a line of pointed projections, carved for about a foot on one

74 75 73 enl. 76 77 78 79 80 81 82 83 84 85

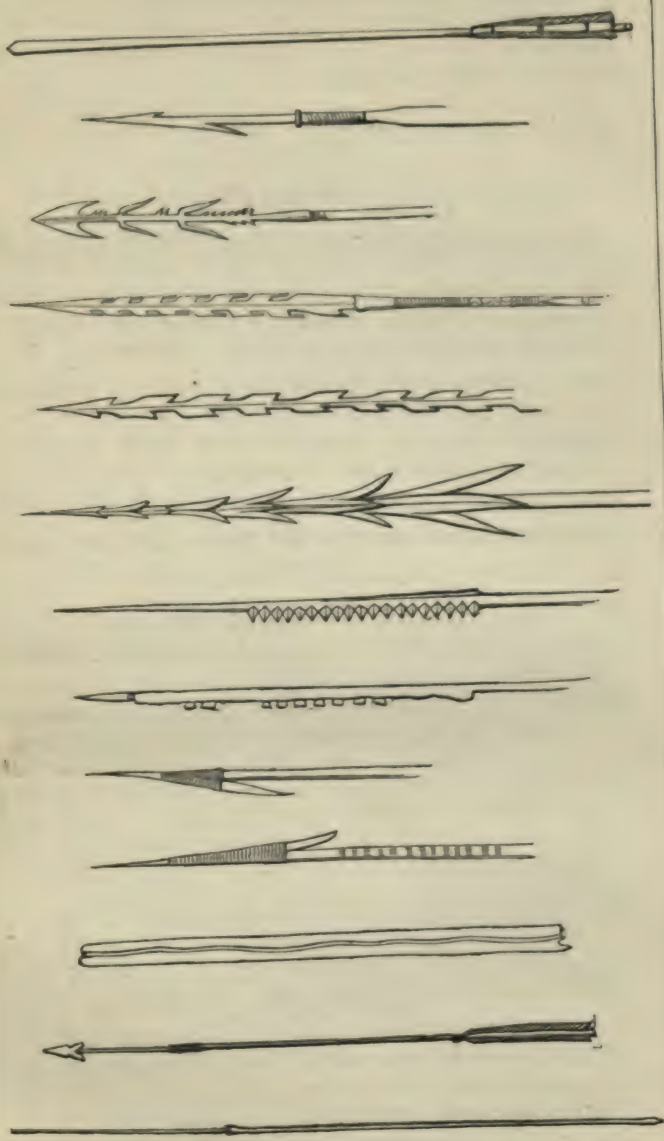


PLATE VIII.



side, apparently representing the flint points stuck into the sides of some of the Australian spears, examples of which may be seen amongst the "hafted implements" on the north wall. Australia.

601. SPEAR, 8 ft. in length, of which the point for about 1 ft. 4 in. has a similar row of points to the last. Australia. Oldfield says these spears are thrown so as to strike obliquely with their rasped sides.
- 601A. Multi-barbed SPEAR, the barbs carved obliquely on both sides. Australia.
602. SPEAR, similarly constructed to No. 600, 13 ft. 4 in. in length. Australia.
- 602A, Fig. 78. SPEAR, with a row of glass flakes stuck on to the side of the point with gum, showing the form from which the last three specimens were derived. Australia.
603. SPEAR of light wood, 9 ft. 7 in. in length, the shaft slightly crooked in places, the point for about 1 ft. 7 in. having a row of oblique points on one side. Australia.
604. SPEAR of light wood, 8 ft. 6 in. in length, with five carved double barbs. Australia.
605. SPEAR, 8 ft. in length, having a long oval iron blade of European metal 10 in. in length, a fore-shaft of hard wood 4 ft. 7 in. in length, and about 2 ft. 8 in. of light wood at the butt-end; the fore-shaft is fastened on with grass binding and gum; there is a cavity at the end for the throwing stick. Cape York, North Australia.
- 606 to 611. SPEARS, 9 ft. to 10 ft. in length, of which the fore-shafts of hard wood are about 2 ft. in length, and carved with barbs pointing forwards and backwards. On one and both sides the fore-shafts are bound on with light-coloured grass, the shafts of light-coloured wood 1 in. to 1½ in. in thickness. Probably from Australia.
- 612 to 623, Fig. 80. SPEARS, 9 ft. to 12 ft. in length in one piece, the barbs carved to represent the drooping branches of a pine tree. Fiji and Friendly Isles.
- 623A. Multi-barbed SPEAR, the barbs pointing forward and backward. Fiji.
- 623B. Carved SPEAR, barbed with rows of small knobs near the head. Fiji.
- 623C. Carved SPEAR, pointed with numerous species of the sting ray. Fiji.

624. Short spear-shaped CLUB with blunt point, 3 ft. 11 in. in length, apparently a spear converted into a club, carved with foliage like the preceding specimens.
625. SPEAR similarly constructed to the preceding specimens, 12 ft. in length with bunches of shell discs round the stem between the barbs. Fiji and Friendly Isles.
626. SPEAR, 7 ft. 11 in. in length and 1 in. in thickness, carved with six rows of small barbs for a space of about 2 ft. 9 in. from the point, in one piece. New Guinea.
627. SPEAR, 8 ft. 7 in. in length, of which 1 ft. 3 in. is a hard wood fore-shaft, carved with four rows of small barbs, and the remaining part of the shaft of bamboo, tapering towards the butt-end. New Guinea or Santa Cruz Island.
- 628, 629. SPEARS, 8 ft. 6 in. and 9 ft. in length, of which 1 ft. 11 in. is a fore-shaft of hard wood, with clusters of sharp barbs bound on to the sides near the points with yellow and red grass, the shafts tapering towards the butt-end. New Guinea.
- 629A. Carved SPEAR. New Hebrides.
- 629B. Carved SPEAR. New Guinea.
- 629C. Carved SPEAR. New Hebrides.
630. SPEAR, ft. 4 in. in length and $\frac{1}{2}$ in. thick, armed with the point of a sting-ray bound on with red braid, the shaft tapering towards the butt-end. New Guinea.
631. SPEAR, 8 ft. 7 in. in length and $\frac{3}{4}$ in. thick at about two-thirds of its length towards the point, thinning out quickly towards the point and gradually to the butt-end, at the end is an oval knob 5 in. long and 1 in. broad in the centre, ornamented with small cross carved ribs. New Guinea. Captain Owen Stanley describes these spears.
632. SPEAR of similar construction to the last, 8 ft. long and $\frac{3}{4}$ in. thick in the thickest part, with an oblong knob at the butt-end, shaped like a flattened beer barrel 1 in. long and $\frac{3}{4}$ in. wide. New Guinea.
- 632A. SPEAR, New Guinea, the broadest part near the point, the butt-end feathered with parti-coloured feathers.
633. SPEAR of similar construction, without a knob, 7 ft. 2 in. in length. New Guinea.
634. SPEAR, 7 ft. 7 in. in length, in one piece, with a carved point; the head is of an elongated leaf-shaped form, with barbs carved upon the face, the points of which are brought together at the base. New Guinea.

635. SPEAR, the head of which is flattened similarly to the last, 9 ft. 10 in. in length, the point multi-barbed for the space of 1 ft. 9 in. from the point. New Guinea.
636. LANCE, 6 ft. 4 in. in length, of which 3 ft. 4½ in. is a fore-shaft of hard wood, with an elongated leaf-shaped head, the greatest breadth of which is 1¼ in., the shaft of bamboo 1 in. thick, stained with an ornamental pattern in black, and thick at the butt-end. New Guinea.
637. SPEAR of similar construction to the last, 7 ft. 4 in. in length, of which 4 ft. 4 in. is a fore-shaft of hard wood, with a leaf-shaped head, the greatest breadth of which is 2 in., the shaft of bamboo stained in an ornamental pattern of black lines and thick at the butt-end. New Guinea.
- 638, 639. SPEARS, 9 ft. 9 in. and 11 ft. in length, in one piece, carved like Nos. 634 and 635, with the addition of two rows of barbs beneath the head on the shaft. New Guinea.
- 640, 641. SPEARS, 9 ft. and 10 ft. 8 in. in length, with points bound with red and yellow grass, painted black and white, with sharp spines bound on for barbs, the shafts tapering slightly to the butt-end. Solomon Isles.
642. SPEAR of black wood, in one piece, 9 ft. 7 in. in length, of which 2 ft. 5 in. is a triangular spear-head 1¼ in. broad at base, ornamented with mother-of-pearl studs inlaid, the shaft tapering towards the butt-end. Solomon Isles.
643. SPEAR, in one piece, of black wood, 8 ft. 9 in. in length, of which 2 ft. 11 in. is carved into a spear head somewhat similar to the last, but not so elaborately finished, the shaft tapering to the butt-end. Solomon Isles.
- 644, 645. SPEARS, 8 ft. 6 in. and 7 ft. 7 in. in length, bound with a red thread, with oval pieces of cane-work bound on to the sides at about 2 ft. 6 in. from the point, the shaft tapering to the butt-end. New Caledonia.
646. SPEAR of similar construction to the last, 7 ft. 4 in. in length, the oval pieces of cane-work attached to the last specimen are apparently represented in carving on the side of this specimen. New Caledonia.
647. SPEAR, 7 ft. 7 in. long, flat in the centre, greatest breadth 1 in., and thickness ½ in., tapering quickly towards the point and gradually to the butt-end, bound with cotton and grass at from 2 ft. 8 in. to 1 ft. 6 in. from the point. Brazil.

648. SPEAR, 8 ft. $3\frac{1}{2}$ in. in length, with a hollow swell at about 1 ft. 11 in. from point, in the hollow a piece of stone is inserted so as to form a rattle; the swell has a slit on each side to emit the sound; carved in one piece, and broadest at the butt-end. Rio Negro, Brazil.
649. SPEAR, in one piece, 9 ft. 11 in. in length, of which 2 ft. 9 in. is carved in a triangular head 2 in. broad at base, and having a triangular section like a modern bayonet, the shaft tapering slightly towards the butt-end. This spear very nearly resembles No. 642, from Solomon Isles in form; it is the original spear of the Xebaroe Indians of Equador. Obtained by Mr. Buckley.
650. Bamboo SPEAR, 9 ft. 7 in. in length, with an iron leaf-shaped head, made by half-castes in Rio Bamba, and sold by them to the Xebaroe Indians, with whom it has superseded the wooden spear above-described.

SCREEN 20.

SOUTH WALL.

The following SPECIMENS are from MANGAIA, one of the Hervey Isles, and show a gradual expansion of the blade:—

651. SPEAR, of dark hard wood. It is a flattened pole, increasing in breadth towards the point, the greatest breadth near the point being 2 in. Mangaia.
652. SPEAR of the same form as the last, showing an increased breadth of blade near the point, greatest breadth $2\frac{1}{2}$ in. Mangaia.
653. SPEAR of the same form as the last, showing a still further increase in breadth; greatest breadth, 4 in. Mangaia.
- 654 to 657. The blade in these specimens has been narrowed beneath the broadest part so as to form a lozenge-shaped spear-head. They have a carved knob at the base of the head, consisting of double cross bands; greatest breadth of blade $4\frac{3}{4}$ in. These spears correspond in form to the club, No. 489. Mangaia.
- 658 to 660. SPEARS of the same form as the last, but having serrated edges, corresponding in this respect to the clubs Nos. 491 to 493, from which they no doubt derived their form, or vice versâ; the blade in No. 659 has a greatest breadth of $7\frac{1}{4}$ in., and might be used as a paddle.

PIER CASE 21.

[Return to the row of Pier Cases commencing at the East End.]

ARROWS, AUSTRALIAN AND PAPUAN.

661. Two white and red painted JAVELINS, 6 ft. 11 in. in length, in one piece, and three cane-pointed javelins. Cape York, North Australia.
662. Eight painted ARROWS, with hard wood fore-shafts, 4 ft. 11 in. long. Notched. No feathers. Solomon Isles.
663. Five ARROWS, with hard wood fore-shafts, 4 ft. 6 in. long, with barbed heads. Notched. No feathers. Solomon Isles.
664. One multi-barbed wooden JAVELIN, with cane shaft and hard wood fore-shaft, 5 ft. in length, the barbs bound on. No notch. No feathers. Solomon Isles.
665. Two bone-pointed ARROWS, 4 ft. 11 in. long, cane, with hard wood fore-shaft. No notch. No feathers. New Guinea.
666. Two multi-barbed ARROWS, cane, with hard wood fore-shaft, the barbs bound on. No notch. No feathers. Melanesian.
667. Four ARROWS with cane shafts and hard wood fore-shafts, one bone-pointed. Notched. No feathers. Island of Ombai, Asiatic Isles.
668. Fifteen painted ARROWS; cane shafts, with hardwood fore-shafts. Notched. No feathers. Island of Santa Cruz, New Hebrides.

PIER CASE 22.

BOWS AND ARROWS, SOLOMON ISLES, NEW
HEBRIDES, AND TORRES STRAITS.

669. Four reed ARROWS, bone-pointed, three with and one without hard wood fore-shaft, 4 ft. long. Notched. No feathers. Torres Straits.
670. Twenty-two ARROWS, with hard wood fore-shafts, some plain and others multi-barbed, some notched, some not notched. No feathers. New Guinea and New Hebrides.
671. Bow and 11 cane ARROWS, with hard wood fore-shafts, not barbed; some notched. No feathers. Solomon Isles.

672. Bow and ARROWS, the latter with hard wood fore-shafts. Not barbed; not notched. No feathers. Sandwich Isles.
673. Seven ARROWS, cane, with hard wood fore-shafts, pointed with spine of the sting-ray. Not notched. No feathers. Solomon Isles.
674. Three ARROWS in one piece, feathered with palm-leaf, one barbed. Not notched. Said to be from Gulf Island, Solomon Isles.
675. Long Bow, New Guinea, with string.
676. Palm-leaf QUIVER and ARROWS. New Hebrides.

PIER CASE 23.

LONG ARROWS. NEW GUINEA AND DEMERARA.

- 677, Fig. 82. Twelve long cane ARROWS, with hard wood fore-shafts, 5 ft. 7 in. in length, three cane-pointed and nine barbed, the cane points 8 in. to 1 ft. 6 in. in length. No notches. No feathers. Some ornamented with coil pattern. New Guinea.
678. Eight long ARROWS, cane, with hard wood fore-shafts, cane-pointed; total length, 5 ft. 9 in., of which the cane points are 1 ft. 3 in. length; each has two feathers, 1 ft. 2 in. in length, set on spirally to give a rotatory motion to the arrow. Demerara, South America.

PIER CASE 24.

SOUTH AMERICAN ARROWS.

679. One LONG Bow, bound with cotton and ornamented with a kind of fret pattern peculiar to this region. Conibo Indians, Lower Ucayali.
680. Fig. 82. ARROWS, variously constructed; the majority have fore-shafts of hard wood; one has a cotton stop below the point to prevent it from passing too far into the wound, and facilitating its withdrawal. The multi-barbed arrows are from the Conibo Indians, and resemble those from New Guinea in the form of their barbs. The majority are not notched, but some have slight notches. South America.

PIER CASE 25.

ARROWS. NORTH AMERICA.

681. Six flint-pointed ARROWS, obtained by Sir Edward Belcher and Mr. Dunn, between Icy Cape and Point Barrow. Two broad chert-headed leaf-shaped arrows from the same locality, obtained by Mr. Dunn. Fourteen bone-pointed arrows. Two blunt bone-headed bird arrows, Fig. 85. One arrow pointed with an European knife blade. The shafts are in one piece, of pine wood, the chert heads fastened on with sinew. In one there is a short bone fore-shaft intervening between the pine shaft and the chert head. The feathers are laid on flat as they came from the bird. Notched. Esquimaux.
682. Four ARROWS, of pine wood, in one piece, pointed with triangular-shaped heads of European iron. The feathers have one side stripped off and set on edge-wise. Notched. North American Indians, eastward of the Rocky Mountains.
683. Three carved bone-pointed ARROWS, each with three feathers set on flat, like the Esquimaux. Notched. North-west coast of America, probably Fuca Islands.
684. Seven ARROWS pointed with glass and obsidian. In two there is a small barbed bone fore-shaft between the pine shaft and the glass head. Two have the longitudinal groove down the shaft, which is peculiar to North American arrows. In one the mode of fastening on the feathers shows a transition stage between the Esquimaux and the ordinary method. At one end, part of the feather is stripped off and the other part laid on edge-wise; at the other end, both sides of the feathers are retained, and it is twisted and laid on flat. All notched. Californian Indians.
- 685, Fig. 75. One ARROW pointed with European iron; the shaft painted red; three feathers set on edge-wise, and a longitudinal groove down part of the shaft. Notched. Californian Indians.
686. HARPOON or SPEAR-HEAD, with part of the shaft. Iron head. Esquimaux.

PIER CASE 26.

ARROWS. AFRICA.

687. Ten iron-headed ARROWS with ogee blades, barbed and demi-barbed. No feathers; some have notches, but the majority have not. Mandingo, West Africa.

688. Ten iron-headed multi-barbed ARROWS. Notched. No feathers. East Central Africa.
- 689, Fig. 83. Thirteen iron-headed multi-barbed ARROWS. No feathers. East Central Africa. Obtained by Consul Petherick.
690. Three multi-barbed iron-pointed ARROWS. No feathers. Abeokuta, West Africa.
691. Six iron-headed multi-barbed ARROWS, with hard wood fore-shafts. No feathers. Notched. Interior of West Africa.
692. One iron-headed barbed ARROW, with hard wood fore-shaft; three feathers. Notched. The head resembling those from North America. Said to be from Zanzibar, East Africa.
693. Two barbed ARROWS, with three feathers set on edge-wise. Notched. Central Africa.
694. A CROSS of 12 multi-barbed iron arrowheads; elaborately finished. Obtained by Mr. Petherick. East Central Africa.
695. Five short bone-headed ARROWS, the bone heads reversible, so as to afford either a blunt or a sharp point as required. Notched. No feathers. Bushman, South African.
696. Small ARROWS with bone fore-shafts, iron-barbed heads; the points constructed to detach themselves in the wound. Notched. No feathers. Bushman, South Africa. In glass tube.
697. Twenty ARROWS of wood, used with the Fan cross-bow, with feathers of leaf. Five preserved in glass tube. Gaboon, West Africa.

PIER CASE 27.

INDIAN ARROWS.

698. Thirty-nine iron-pointed ARROWS, of which eight have no feathers, and lozenge-shaped blades; ten have square sectioned points; four have small feathers; seventeen have various forms of heads and feathers. All are in one piece without a fore shaft. All notched. India.
699. One blunt-pointed bird ARROW, three feathers. Notched. India.
700. One whistling ARROW. No feathers. Notched. India.

PIER CASE 28.

ARROWS. INDIAN AND PERSIAN.

701. Twenty-nine ARROWS with heads of various shapes. Shafts in one piece, with feathers. Notched. India and Persia.
702. Blunt-pointed bird ARROW, with feathers. Notched. Persia.
703. Two ARROWS with demi-barbed heads, with feathers. Notched. Persia.
704. Two ARROWS, with lozenge-shaped heads. Feathers. Notched.
705. One broad barb-headed ARROW. Feathered. Notched. Persia.
706. One ARROW with chisel-shaped head. Feathered. Notched. Persia.
707. Two ARROWS, with leaf-shaped heads expanding at the base. Feathered. Notched. India.
708. Fourteen small ARROWS for blowpipe. Silhet, Bengal.
709. Part of two Indian ARROWS, with feathers close to the point. India.

PIER CASE 29.

ARROWS. CHINESE, JAPANESE, INDIAN, AND MALAY.

710. Ten broad-bladed ARROWS, each with three large feathers set on edge-wise. Notched. China.
711. ARROWS with iron heads, having square cross sections and large feathers. Notched. China.
712. Ten ARROWS with obtuse angled iron conical points and large feathers. Notched. Japan.
713. One iron-headed ARROW. Feathered. Notched. Aboors, Assam.
714. Four ARROWS, one with blunt head. Feathered and Notched. Probably Central India.
715. One iron-headed ARROW with broad pierced blade. Shaft broken.
716. Three large broad-bladed ARROWS of the Veddahs, of Ceylon, with five feathers. Notched.

717. Eleven green painted ARROWS without feathers. Notched. India or China.
718. Nine ARROWS with feathers. Notched. Asia.
719. One ARROW with large conical head and flat end; used to knock over birds. Feathered and notched. Malay.
720. One copper-headed ARROW, feathered with leaf. Digaroo Mishmees, Assam. In glass tube.
721. ARROW, the same as the last. Digaroo Mishmees, Assam. In glass tube.
722. One wood-pointed ARROW, feathered with leaf, poisoned. In glass tube. Assam.
723. Three iron-headed ARROWS, used with Malay blow-pipes. No feathers. Small hard wood fore-shafts. Borneo.

[Return to line of Screens.]

SCREEN 30.

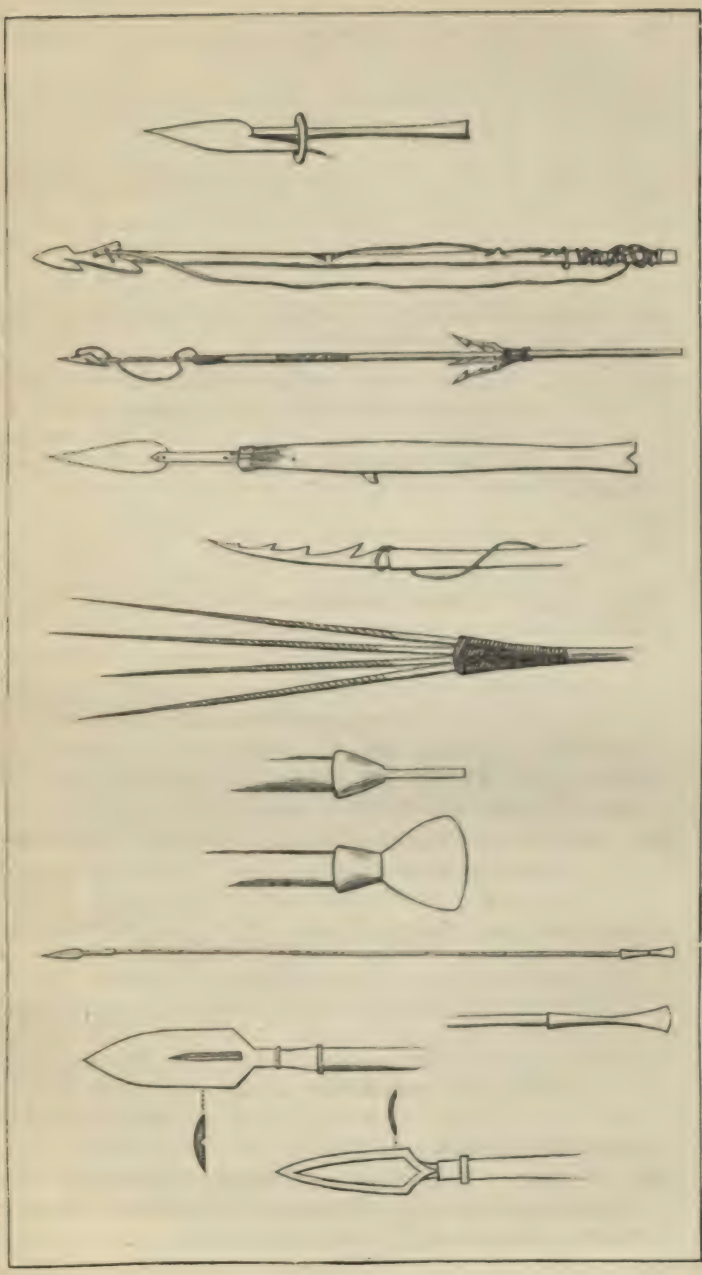
AFRICAN IRON-HEADED SPEARS.

724. Iron SPEAR, with leaf-shaped head and iron shaft. White Nile, East Central Africa. Obtained by Consul Petherick.
725. SPEAR with iron leaf-shaped head. Central Africa.
726. SPEAR, with iron leaf-shaped head and lozenge-shaped projection on the socket. Haussa tribe, West Africa. Obtained by Mr. Warren Edwards.
- 727 to 758. SPEARS with iron heads, made by the Fan negroes, Gaboon, West Africa, showing transitions of form between the leaf-shaped lozenge-shaped triangular and barbed; some have an ogee section, others plain faces, and others a rib along the centre of the blade.
759. SPEAR with barbed head and straight cylindrical shaft with iron ferule at top. West Africa.
760. SPEAR with leaf-shaped head, hollowed in the centre like some of the spear heads of the bronze period, having an iron twisted knob at the butt-end of the shaft. Abyssinia, brought home by the troops in 1868.
761. SPEAR with leaf-shaped head, 2 feet long and $1\frac{1}{4}$ inch greatest width, with two grooves on each face and a twisted knob of iron at the butt-end of the shaft. Abyssinia.

762. Multi-barbed SPEAR with long iron barbs. Neam-nam tribe, White Nile, used with the reed shield, No. 68 and the iron boomerangs, Nos. 183, 184. Obtained by Consul Petherick.
763. SPEAR with leaf-shaped head and a wicker knob at the end, having a handle of wicker work fixed at 1 foot from the butt-end. Africa.
- 764 to 767. SPEARS, 6 ft. long, with blades of different forms, leaf-shaped, barbed, and multi-barbed. Nubia.
768. SPEAR with triangular blade having two indentations, one on each side and a pointed spike at the butt-end. Zanzibar.
769. SPEAR with triangular blade, the shaft is enlarged towards the butt-end to balance it. Zanzibar.
770. SPEAR with square iron head with four blades, one at each corner and an iron point at the butt-end. Zanzibar.
771. SPEAR of the same form as the last, the four blades at the corners enlarged. Zanzibar.
772. ASSAGAI, 5 ft. in length, with small leaf-shaped head, having a long iron fore-shaft 3 ft. $3\frac{1}{2}$ in. long, and an iron pointed end 1 ft. 1 in. long, leaving the wooden part of the shaft only 9 in. in length. East Africa.
773. SPEAR, 4 ft. 8 in. long with a leaf-shaped head and four iron barbs between the blade and the socket. Central Africa.
774. Caffre ASSEGAI, 5 ft. $3\frac{1}{2}$ in. in length, with a square sectioned blade, the wooden shaft tapering to butt-end. South-east Africa.
775. Caffre ASSEGAI with leaf-shaped head and iron fore-shaft 8 in. long, wooden shaft tapering to butt-end. South-east Africa.
776. Caffre ASSEGAI, 5 ft. 6 in. long, having a long dagger-shaped blade, 1 ft. $1\frac{1}{2}$ in. in length. South-east Africa.
777. Caffre ASSEGAI with a leaf-shaped blade having an ogee section and an iron fore-shaft.
778. Caffre ASSEGAI with dagger-shaped blade 1 foot long.
779. Caffre ASSEGAI with leaf-shaped blade and iron fore-shaft.
780. Caffre ASSEGAI with small leaf-shaped blade having an ogee section, with strings of glass beads attached to the base of the socket.

781. Caffre ASSEGAI of the same form as the last, the blade with ogee section.
782. Caffre ASSEGAI of nearly similar form to the last, the fore-shaft jagged at the sides, the blade with an ogee section.
783. Caffre ASSEGAI with broad barbed head, 2 in. long and $1\frac{3}{4}$ in. between the extremities of the barbs.
784. Caffre ASSEGAI with an irregularly cut blade, having a jagged fore-shaft.
785. Caffre ASSEGAI with barbed head, having two long barbs and an iron fore-shaft.
786. Caffre ASSEGAI with an irregularly barbed head, having one barb lower than the other, and two barbs on the sides of the iron fore-shaft at alternating intervals. This is probably a harpoon head bound on with thongs of leather.
- All the ASSEGAIs above-described are bound on to their shafts with thongs or bands of leather.
- 786A. SPEAR with iron leaf-shaped blade, exactly like those used in Africa, now used by the natives in Queensland, Australia, but whence derived is uncertain. Obtained by Mr. H. Ridley.
787. SPEAR with leaf-shaped head, the shaft passed through the tail of a giraffe, the hair at the end of which serves as a feather to guide the weapon at 2 feet from the butt-end. Western Africa.
788. SPEAR with double blades one above the other, twisted at right angles to one another, the top blade leaf-shaped, 4 in. long and 1 in. greatest breadth with ogee section, the other 6 in. long and $1\frac{3}{4}$ in. broad, also leaf-shaped and having an ogee section, beneath the blades is an iron fore-shaft 1 ft. $2\frac{1}{2}$ in. long, ornamentally twisted in two places. It is altogether a remarkable piece of ironwork considering the rough materials employed. The wooden shaft is 3 ft. 9 in. long, thicker at top and below than in the middle, bound round with plaited cane work for 8 in. near the fore-shaft and covered with leather for 1 ft. 9 in. from the butt-end.
- 788A. SPEAR, with large iron head, ornamented with chevrons and circles. Obtained by Sir Henry Denham. West Africa.
789. An European whaling HARPOON with iron shaft.

86 87 88 89 90 91 92 93 94 95



88 enl.

PLATE IX.



SCREEN 31.

SOUTH WALL.

790 to 799. SPEARS. Hausa tribe. Central Africa. With lozenge-shaped projection at the point of junction of blade and socket; the length of the blade in these specimens gradually increases from $8\frac{1}{2}$ in. to 2 ft. $4\frac{1}{2}$ in., the width at the same time diminishing from $2\frac{1}{2}$ in. in the shortest to $1\frac{1}{4}$ in. in the longest, thus gradually converting the spear into a kind of glaive.

SCREEN 31.

SOUTH WALL.

SPEARS WITH SPUD ENDS.

800, Fig. 88. SPEAR with leaf-shaped head and iron spud at the end. Nupi tribe, West Africa. Obtained by Mr. Warren Edwards.

801. SPEAR, total length 4 ft. 2 in, the head 1 ft. and the spud 1 ft. 1 in. in length. The spud has ridges at the sides like some of the bronze palstaves of the bronze period; the spud is bound round with iron wire. Liberia, West Africa.

802, 803. SPEARS with leaf-shaped heads and small spud ends. East Africa or Madagascar.

804. SPEAR of precisely similar form to the last, believed to be from the Malay Archipelago; the Malay spears are so exactly similar in form to those of Africa that it is difficult to distinguish them.

805 to 808. SPEARS with similar heads and spuds. Probably Central Africa.

809. SPEAR with multi-barbed head and broad spud. Probably East Central Africa.

810. SPEAR of the same form as the last, with the blade of the spud expanded.

811. HOE with a blade similar to those used for axes in South-east Africa and a spud at the end. White Nile to Central Africa.

811 A. Iron SPEAR with iron spud end, used by the natives in Queensland, Australia. Whether this form was originally received from Africa, brought over by Europeans or from the Malay Archipelago, is uncertain. Obtained by Mr. H. Ridley.

SCREEN 31.

SOUTH WALL.

ASIATIC SPEARS.

- 812 to 814. Indian JAVELINS, 8 ft., 6 ft. 8 in., and 6 ft. in length, respectively of steel, in one piece; in some, the blade has a triangular or square section; in No. 750 it has a flat expanded blade of triangular form with knobs of steel on the shaft with iron rings between them.
815. SPEAR with bayonet-shaped blade, having a triangular section and a brass ferule. Probably Chinese.
- 816, 817. SPEARS with leaf-shaped heads and brass ferrules. Java. The shaft tapers towards the butt-end.
818. SPEAR with leaf-shaped head, brass ferrule and a curved wooden shaft tapering towards the butt-end. Probably Java.
819. Dyak SPEAR with a wave blade. Borneo.
820. SPEAR and rest for firelock. The blade is supported on the head of a human figure constructed in iron or steel, the firelock rests on the feet of the figure. Probably Malay.
- 821, 822. SPEARS with small leaf-shaped blades and long wooden shafts. Andami Nagas, Assam.
823. SPEAR of the Soolikutta Mishmes, Assam, the shaft ornamented with twisted human hair.
- 824 to 826. SPEARS of the Nagah, Assam.
827. Nagah SPEAR, with a rudimentary barb on each side.
828. Nagah SPEAR with two large barbs, one on each side.
829. Nagah SPEAR with four lance barbs, two on each side.
830. Nagah SPEAR with three pair of large barbs.
831. Part of SPEAR. Probably Assam.
832. SPEAR with triangular blade. Locality not known.
833. Quiver containing three Persian JAVELINS, 2 ft. 6 in. in length.
- 834, 835, 836, Figs. 86 and 87. SPEARS, Japan, the iron heads convex on one side and concave on the other. A form derived from the use of bamboo spear heads; in one the concavity is reduced to the dimensions of a narrow groove on the face of the blade. On Screen 20.
837. SPEAR with leaf-shaped blade, the flat tang of which is let into a slit in the shaft and fastened with brass rivets. Locality not known. On Screen 30.

828, 839. Long LANCES called *Balam*, the shaft of which is made with small bamboo used by the Mahrattas of India. Over the Piers.

SCREEN 32.

SPEARS WITH TWO OR MORE POINTS.

Klemm, with great probability considers these kind of spears to have originated in the use of the forked branches of trees for different purposes ; they are employed chiefly for spearing fish, but are occasionally used as weapons. No. 840, from Cape York, North Australia, is armed with several spines of the *trygon* or sting-ray. One large one projects in the centre, and eight others are bound on round it ; these spines are barbed like many of the multi-barbed spears used in this and other countries, and already described. The fish which is armed with this weapon inflicts formidable wounds with this spine, and it has, doubtless, suggested its use for spear and arrow points, for which purpose it is used in many parts of Polynesia and South America, as may be seen by specimens of arrows in this collection. No. 630 from New Guinea, is thus armed, and No. 673 from Solomon Isles.

Capt. Cook found arrows with two and three points in use in Mallicollo, New Hebrides, and Lieut. Markham obtained some double-pointed barbed arrows from Vasalai Island, New Hebrides. They are also used in Fiji, in Borneo, and other parts of the Malay Archipelago. The four-pronged spears from Fiji islands, Nos. 853, 854, Fig. 90, are used also in the Friendly Islands. No. 848 from Solomon Islands is constructed of human bone, as are also those from Marquesas, Nos. 849, 850. Forked arrows with three points are used by the Arowaks, and by the Indians of Surinam, in Brazil, and elsewhere amongst the South American Indians, Nos. 855, 856. The Sencis of South America use a short spear called *Kowas*, pointed at one end and shaped like a club at the other, with stags' antlers fixed down the side. This, from the description of it, must somewhat resemble the *nuguit* of the Greenlanders. Forked spears and arrows are used for fishing by the Oregon and other Indians of North America. No. 852 from Canada has two barbs attached to the outer and longer of the three prongs, so as to grasp and pierce the fish at the same time. No. 857 is a forked spear of the kind used by the western Esquimaux ; it has two ivory prongs on the point, and three small prongs

attached to the middle of the shaft, the object of which is to increase the chance of hitting the birds at which it is thrown, by striking them with the side prongs in case those at the point should chance to miss. This weapon, called *nuguit*, is used also in Greenland, and is figured by Crantz. Capt. Beechey speaks of two kinds, one with the prongs in the centre, like No. 857, and the other with three prongs at the point. They are also described by Sir John Ross and Frobisher, and Beechey says that on the north-west coast of America birds are struck by darts resembling the *nuguit* of Greenland. The Esquimaux cast them by means of the throwing stick. Klemm figures a very interesting specimen of this class of weapon from Behring Straits; the shaft is made of the petiole of a palm, and it is armed with one long point in the centre, and six shorter ones round it, fastened on with strings of bark, the material is indigenous in the South Sea Islands, and it has been washed northward by the sea currents, thereby explaining the manner in which many of these wooden weapons may have been communicated to distant lands, especially those which like the forked spear are used upon the sea shores. Iron spears with forked blades, Nos. 862 and 863, are used in Central and West Africa. In Denham and Clapperton's travels, an illustration is given of the double-pointed spear of the Bagirmi, used for war by the cavalry, who employ quilted armour; the spear is armed with two long slender blades, the faces of which are parallel to one another. Barth also gives an illustration of an iron trident or fish spear, used by the Musgu, it has a long prong in the centre and two shorter ones at the sides, and is probably used both for fishing and for war. No. 864 is a Chinese partisan, of nearly the same construction. Under the names of *spetum*, *partisan*, *ranceur*, and *military fork*, this class of weapon has been used in China, India, and Europe; they exhibit a great variety of forms, all of which are closely connected, and belong to a condition of culture corresponding to that of Europe in the Middle Ages.

SCREEN 32.

SPEARS WITH TWO OR MORE POINTS OR PRONGS.

840. SPEAR, 7 ft. long, including a fore-shaft of 3 ft., armed with the spine of a sting-ray, surrounded by eight others, and used with the throwing stick. Cape York, North Australia.

841. SPEAR, 7 ft. 8 in. in length, with four points pointed with bone, 1 ft. 3 in. in length, used with the throwing stick. Cape York, North Australia.
842. SPEARS of similar form to the last, with four points armed with bone. Cape York, North Australia.
843. SPEAR of similar form to the last, pointed and barbed with bone. Cape York, North Australia.
844. Reed SPEAR, 10 ft. 6 in. in length, including the multi-barbed points of red hard wood, 1 ft. 9 in. in length, fastened on with grass binding. Australia.
- 845 to 847. Three SPEARS with light wood shafts, each having two points of hard wood, one of which is barbed; the prongs are fastened on to the shaft with plaited sinnet. Australia or one of the neighbouring islands.
848. SPEAR with three large points, constructed of human bone and numerous small bone points bound on to the side and pointing forward, the shaft tapering towards the butt-end. Solomon Isles.
- 849, 850. SPEARS of dark hard wood, with multi-pronged heads carved out of human bone. Marquesas.
851. A BIDENT, of dark red wood, bound with cane, and having a paddle-shaped butt-end. North-west coast of America.
852. Two-pronged head of a fishing spear of the Indians of North America.
- 853, 854, Fig. 90. SPEARS with four large branching prongs, fastened on with sinnet binding and carved. Fiji Islands.
- 855, 856. Two three-pronged arrows of reed, in one of which the feathers are laid on flat, like the Esquimaux feathers, both sides being retained; no notch to either arrow. South America.
857. Esquimaux NUGUIT, with two barbed bone points, and three deer-horn prongs in the centre of the shaft; the shaft of pine, having a piece of bone at the butt-end, in which is a cavity for the pin of the throwing stick.
858. Arrow with two bone points, barbed or rather notched; it has three feathers and a notch. Vancouver Island and North-west coast of America. Obtained by Lieut. Pusey, R.N.
859. Short SPEAR, with two bone points, which are curved and meet one another at the points; barbed. Esquimaux.

860. ARROW, with two bone points, feathered and notched; the feathers have one side scraped off, and are bound on edgewise. Esquimaux. Obtained by Sir Edward Belcher.
861. NUGUIT, pointed with a narwhal's tusk, broken; three deer-horn points in the centre; used with the throwing stick. Esquimaux.
862. Iron pointed FISH FORK, with two prongs. Africa.
863. BIDENT, with two forked blades, the edges of which are in the inside. Central Africa.
864. TRIDENT or PARTISAN, the centre prong projecting beyond the others. China. Similar to those used in Europe in the time of Edward IV.

SCREEN 32.

HARPOONS.

1st stage.

2nd stage.

It has already been said that barbed spears are especially used for spearing fish. Oldfield says that the natives in the neighbourhood of Sharks Bay, Western Australia, use for large fish, such as the porpoise, a very powerful spear called *Pillara*, 14 to 16 feet long, with 8 to 12 pairs of large barbs, and to this is attached a rope made of sedges, so that when it is buried in a fish a number of people together are enabled to draw it ashore. This may be regarded as the first stage of the harpoon. In the northern part of Australia and in many other parts of the world, it has already been stated that fore-shafts of hard wood are inserted into the bamboo or reed shaft, and these are frequently barbed. In using this kind of spear for fishing purposes the fore-shaft would frequently come out of its fastenings, and in order to secure it it would be necessary to unite the two shafts or the hard wood point and the shaft by means of a string. It would soon be discovered that this was an advantageous arrangement, for the barbed point remaining in the wound, the shaft becoming detached from it, when joined by a string, acted like a kind of buoy to mark the position of the fish floating on the surface of the water. We accordingly find this contrivance systematised in many parts of the world; the barbed point is constructed purposely to come out or to unship when the animal is struck, and is united with the shaft by a loosely-attached thong; this is the second stage in the development of the harpoon, examples of which are exhibited from different countries. No. 873 from the Esquimaux, No. 882 from British Guiana,

Figs. 91 and 84, and No. 884 from Tierra del Fuego are of this class. Harpoons constructed so that the fore part, which is bound on with thongs of leather, becomes unshipped on striking the animal, are seen in Nos. 866 and 801. In the former of these two specimens, Fig. 92, we see another example of the almost universal practice amongst savages of adapting their weapons to the resemblance of some animal form. The fore-shaft is here made out of a piece of the narwhal's tusk, and the body of the shaft has been carved in imitation of the body of the fish; the fore-shaft springs out of the nose exactly as in the natural position of the tusk of the animal. In all cases in which the detached point or fore-shaft of a weapon is inserted into a socket in the shaft, it is evident that the part of the butt-end of the point which was inserted in the shaft must protrude for some distance from the wound, and this of course renders it likely to be knocked out of the wound, as the fish, with the string attached to it, flounders amongst the rocks on the sea bottom. In the few exceptional cases in which, amongst the Esquimaux, this system is reversed, and the shaft is inserted into a socket in the bone point or fore-shaft, this difficulty is avoided, as the head would by this means be completely buried in the wound before the shaft was withdrawn, and the barbs at the base of the socket would serve to retain it completely within the body of the animal. This is the third stage in the development of the harpoon, 3rd stage. which in a systematised form is represented in the Esquimaux harpoon No. 878, Fig. 93. In all cases in which an iron head with a socket is used this kind of harpoon has been adopted as may be seen in the specimens, No. 883 from South America and No. 885 from West Africa. The metal socket, however, was a contrivance of slow growth, as will be seen when we come to describe the weapons of the Bronze period. The fourth stage of the harpoon consisted in at- 4th stage. taching the string to the harpoon head in the centre on one side, that is, halfway between the point and the tip of the barb; by this means, when the string is drawn tight after the harpoon head is inserted into the wound, the barb is forced into the sides of the wound by the pressure of the string, and the harpoon head assumes a position at right angles to the line of tension, thereby increasing the difficulty of extracting it, and causing it to adhere, with the apparatus attached to it, more firmly to the animal. Examples of this are seen in the Esquimaux harpoons, Nos. 870 and 874, Fig. 94, the latter armed with a metallic point. This contrivance is so ingenious that, in 1852, a model of it was constructed at

Woolwich for adoption in the Royal Navy. No. 886, Fig. 95 is the harpoon head used by Europeans at the present time the principle of which has been copied from the Esquimaux harpoon. The distribution of the harpoon is almost universal. It appears probable that in its first and second stages it was of very early introduction. Harpoon heads of the second stage, barbed, and very much resembling some of those used by the Esquimaux, have been discovered in the French caves of the rein-deer period, one of which is exhibited in the desk cases. In the third stage it is represented in South America, amongst the Esequibo Indians, amongst the Darien Indians, and in Nicaragua. In the fourth stage it is only found amongst the Esquimaux of the northern region of America and Greenland, and amongst the Shoshones of the Snake river in North America, who use a harpoon exactly like that of the Esquimaux, constructed to turn in the wound like theirs. This form was also formerly used in Japan, if Siebold's plates are to be relied upon; some of the barbed bone-headed and flint-pointed arrows in these plates also have a very curious resemblance to those of the Esquimaux. The fish-hook derived its origin from the barbed harpoon head, as will be seen in the description given of fish-hooks hereafter.

SCREEN 32.

HARPOONS.

865. BOAT HOOK. Fiji. The hook is formed of two boars' tusks fastened on to the shaft with plaited sinnet.
- 866, Fig. 92. Esquimaux HARPOON, the blade of iron and leaf-shaped, 10 inches long. A bone fore-shaft of narwhal's tusk, one foot long, is bound on with leather thongs, so as to become unshipped from its shallow socket when fixed in the animal; the shaft, of red wood, is formed to represent the body of the narwhal, the fore-shaft springing out exactly in the position of the tusk of that fish.
867. HARPOON of similar construction to the last, except that the iron blade is smaller and the shaft of the ordinary form; it has a bone nut in the centre to assist in throwing it. Esquimaux.
868. Esquimaux SPEAR, having a blade of walrus ivory at one end, and an ivory ball at the other, in which is inserted a bone harpoon point, fastened on with thongs; used for spearing fish.

869. SPEAR, composed of a narwhal's tusk, pieced and spliced at the butt-end in two places.
870. A similar implement to the last, consisting of a shaft composed of narwhal's tusk, with a harpoon point at the end; the harpoon point is of ivory, and is constructed to unship and turn in the wound; the butt-end of the shaft is of pine wood. Esquimaux.
871. Esquimaux SPEAR, with blade of walrus tusk at one end; the other constructed to represent a bear's head, with a hole in the mouth of the animal for the insertion of a small harpoon head like that of No. 802. Obtained by Sir E. Belcher.
872. HARPOON, with short fore-shaft, the blade pieced with thongs in a very ingenious manner, the detailed mechanism of which may be better seen in the case containing bone implements at the east end of the room. The bone point thus pieced, is constructed to unship in the wound.
- 873, Fig. 91. Esquimaux HARPOON ARROW, with multi-barbed head and feathers, one side of which are stripped off and fastened on edgewise.
- 874, Fig. 94. Esquimaux HARPOON HEAD, and ivory fore-shaft, the harpoon armed with an iron blade. Fourth stage. Constructed to turn in the wound.
875. Esquimaux model HARPOON, with float, consisting of a bladder of air attached. Obtained by Sir Edward Belcher.
876. Esquimaux HARPOON, *Agligak*, with a small moveable pin of ivory having a harpoon point at the end of it. Obtained by Mr. Dunne between Icy Cape and Point Barrow. 4 ft. 9 in. in length.
877. Esquimaux AGLIGAK, the point a multi-barbed ivory point, inserted into the shaft and fastened with a thong, to unship and come out in the wound. Second stage.
- 878, Fig. 93. Esquimaux HARPOON, with iron fore-shaft and ivory harpoon head, having a plain point not barbed; the fore-shaft is inserted into a hole in the point. Third stage. The shaft has three bone prongs in the centre.
879. HARPOON ARROW, Alleutian Isles, having a multi-barbed point inserted into the end of the shaft. Second stage. Feathered with three feathers set on edgewise.
880. HARPOON JAVELIN, Alleutian Isles. Similarly constructed to the last, except that it has no feathers.

881. Esquimaux model HARPOON, with float and line for harpooning the whale. This elaborate specimen exhibits several methods of backing the harpoon point, the line being of delicately-plaited rein-deer sinew. Obtained by Sir E. Belcher.
- 882, Fig. 84. ARROW, with barbed head, constructed to unship in the wound; covered with a sheath; the feathers have a spiral twist. Macoushie Indians, Guiana, South America.
883. HARPOON ARROW, with iron barb socketed head. Third stage. South America.
884. Bone HARPOON HEAD, Tierra del Fuego. The head is to insert into the end of the shaft. Second stage.
885. HARPOON, with iron barbed socketed head, third stage, and a cork float attached to the butt-end of the shaft. Fan negroes, Gaboon, West Africa.
- 886, Fig. 95. European HARPOON HEAD of iron, constructed with a pivot and a spring so as to turn in the wound, when the metal loop is pushed off by thrusting it into the whale; constructed after the Esquimaux in its fourth stage.

PIER CASE 33.

SPECIMENS ILLUSTRATING THE GEOGRAPHICAL DISTRIBUTION OF CORRUGATED IRON BLADES OR BLADES WITH AN OGEE SECTION, DOUBLE SKIN BELLOWS, AND IRON WORK.

Conjectures as to the origin of metallurgy in Africa are of interest. Although the general form of some of the weapons used by the negroes in most parts of that continent belongs to a pre-metallurgic class, as we have already seen, yet the use of iron has been known, and it has been worked by the natives from the earliest period known to modern travellers. Stone and flint implements have been discovered in the south and west of Africa, and Herodotus says that the Ethiopians in the army of Xerxes used arrows that were tipped with stone. We have, therefore, sufficient evidence of a stone age having existed in former times; but Barbosa, who visited the east coast of Africa in 1512, says that the Kaffirs and the inhabitants of Madagascar were then armed with iron assegais which they wrought themselves. Where, then, did they receive their knowledge of the mode of working this metal?

Nothing is better calculated to throw light on the subject, than tracing the distribution of the various forms of weapons, and other appliances used by the iron workers, and which appear to have been handed down from time immemorial with but little change.

It appears to be a very reasonable supposition that metallurgy may have been derived from the Egyptians, although we have no actual evidence of such being actually the case, yet the contact of the Egyptians with the Ethiopians, so frequently represented in the sculptures, is sufficient to warrant us in assuming that it might have spread from that source. We know iron was used in Egypt in the 12th dynasty, and we have already seen that the spud at the end of the lance, which is common at the present time throughout Africa, was used in Egypt during the Bronze period. Why then did not the knowledge of the use of bronze spread over Africa in the same manner? This may be accounted for by the fact that throughout Africa, unlike most other parts of the world, iron is the most abundant and attractive metal, being found frequently in solid lumps on the surface of the ground. Nearly all African travellers concur in their accounts of the abundance of this metal. In the south-west, Mr. C. T. Anderson describes it as being found in great quantities, either in ironstone or pure in a crystallized state. Kolben mentions large iron flakes on the surface near the Cape of Good Hope, and Livingstone gives a similar account of some parts of the country he traversed on the eastern coasts and in the interior. Accounts from the Gaboon country describe it as being so plentiful there, and so visible to the eye, that the sand upon the sea shore sparkles with it. Du Chaillu also confirms this by his description of the Fan iron workers. In Kordofan, Mr. Petherick speaks of a very rich oxide of iron found near the surface, containing from 55 to 60 per cent. of pure iron, and he says that the Djour tribe procure the finest quality from the rocks upon the surface. Denham and Clapperton mention it, near Mourzuk, in kidney-shaped lumps upon the surface; and at Bilma, the capital of the Tibboos, they speak of nodules of iron ore in the red sandstone. Near Mandara they speak of iron as being the only metal found in the hills and that in great abundance; but the Bornouese procure their best iron from Soudan. Barth says that magnetic iron is found in the hills at Jinninau, south of Asiu, in the country of the Kelowi Tawarek, and also near Kuka in the Mandingo country. Park mentions the ironstone found on the surface

Surface iron.
Africa.

and used by the natives, and says it is of a dull red colour, with greyish spots; and Grant, in his Walk across East Central Africa, says that the natives pick up walnut-sized nodules of iron, covered with rusty dust, and in a short time turn it into a spear that glistens like steel. Mr. Warren Edwards, who was for some time in charge of the Niger expedition, informs me that he has often seen the natives use the fragments of ironstone found upon the surface to support their earthen vessels over the fire in cooking, and it has frequently struck him that it was by this means they first discovered the smelting process.

From these accounts we see that Africa is essentially an iron producing country, and that the ore is found in situations that would be favourable to its having been employed by the natives in a very primitive condition of culture. To this cause also we may probably attribute the fact that the inhabitants of Africa appear to have passed direct from the stone implements that are now found in the soil, to that of iron, without passing through the intermediate bronze period, which in Egypt and other countries intervened between the ages of stone and iron.

Double bellows.

But in order to work iron, something more is required than simply heating it in the fire; it is necessary to obtain a continuous blast of air in order to keep the temperature to a sufficient height for the purpose, and it is therefore of interest to observe how this blast is obtained and from what source the apparatus for producing it appears to have been derived. Moreover, if the knowledge of the use of iron had originated independently in different parts of Africa, the iron weapons would be of various forms in different parts. Each locality would produce weapons in imitation of the wood and stone ones formerly employed; the mode of procuring a continuous blast of air would be different in different places, and we should not observe the uniformity in the shapes of the iron implements throughout the continent which is actually the case. No. 906, Fig. 96, is a portable and somewhat advanced kind of the double bellows of skin, used throughout the continent of Africa; the valves or rather the lips of this apparatus, worked alternately with the right and left hand, have been torn off by use, but the apparatus as it is, is sufficient to explain the construction of an African "pair of bellows." These bellows are found in various stages of development on the African continent, by which means we are enabled to trace the varieties through which they have passed in former times. The simplest form are those described by Consul Petherick, in

Kordofan. "The blast," he says, "is supplied by skin bags worked by hand; these bags, like those used for carrying water, are made of skins of sheep or goats, which are flayed by two incisions from the tail down to the hocks, the skin being drawn over the body is cut off at the neck, which makes the mouth of the bag.* After tanning, the hind legs are cut off, and each side of the skin sewn on to a straight piece of stick; loops are placed on the outside for the fingers of the operator to pass through. It can be opened and closed at pleasure; the neck is secured to a tube of baked clay, and four men or boys seated round the cupola, each with a bellows of this primitive description, produce a blast by opening the bags when drawing them towards them and closing them quickly push them forward, by which means the compressed bags discharge the air through the tubes into the furnace, quick alternate movements of the arms of the operators producing a blast which throws out a flame about a foot high from the top of the furnace, and the slag with the metal is allowed to collect in a hole beneath it." This kind of bag formed of the skin of a flayed animal, as described above, appears to be used for a variety of purposes, as water vessels and as pouches, two of which are seen in this collection amongst the specimens of clothing, and they also in some countries form the reservoir of air for the bagpipes. E. B. Tylor says that at Pæstum, in Italy, he saw a wandering tinker, using "a double bellows of two goats' skins, with which he threw a current of air into his furnace, by alternately pressing and squeezing the valve of each"; it is in fact a survival of the *foliis* of the Greeks and Romans, which were of similar construction, composed of the skins of oxen, goats, or smaller animals, according to the requirements and size of the furnace. The bellows of the Bassutos in south-east Africa, as described by Casalis, are constructed much upon the same system, and consist of "two long narrow bags both ending in a horn tube which concentrates the wind and conveys it to the hearth. The end opposite the tube is furnished with two small sticks of wood parallel to each other, which being pressed one against the other, shut at pleasure the opening which serves to admit the air; a boy seated on the ground gives a cross movement to these bags by drawing them to him and pushing them to the fire alternately, whilst the fingers of each hand passed through two loops open and shut at the right moment to

* The word bellows, according to Johnson, is derived from bellies.

"imprison the fluid atmosphere." At Kouka and in the Mandara hills, Clapperton describes the same double bellows of skins, and says that the hammers used were two pieces of iron weighing about two pounds each, and their anvil a coarse piece of the same metal. In the Mandingo country, West Africa, Park describes a double bellows made of two goats' skins which worked alternately for a continuous supply to the furnace; and in Darfur, Browne gives a description of a bellows of the same description. Now compare this with the account given by Mr. J. Davy, of the bellows used in Ceylon. One kind consists of a double bellows worked by the feet, in which the operator treads alternately on the orifice of each, thus producing a continuous blast; another kind is still more closely after the pattern of the African one above described. "It consists of a couple of bags made of bullocks' hides, each furnished with a bamboo nozzle and a long slit at the mouth with wooden lips that are opened and drawn up, and shut and pressed down alternately by the hands of the person sitting between the pair, who keeps up a constant blast by the alternate action of the two." In Kolapoor, in the Bombay presidency, Capt. Graham, in a report on the principality, speaks of the double bellows used in smelting iron, and of the preparation of the moos or tubes of clay mixed with pounded and burnt flint, which communicate the blast to the furnace. In Kattywar in the peninsula of Guzerat, Western India, Capt. Jacob, in a report on the condition of the province in 1842, in describing the smelting apparatus used by the natives, says, "the bellows consist of bullocks' hides, two pairs to each furnace, sewn round bamboo hoops in vertical rings, and worked alternately by downward pressure, the person using them closing the mouth of the sack as he weighs upon it with his chest and arms; a clay tube connects the nozzles of the pair of bellows with the furnace." In Abeokuta, West Africa, Capt. Burton describes an improvement upon this system, which leading to a still further development of the system, is worthy of attention. Here the "two bags of rough goat skin are secured in troughs cut out of a single piece of wood, the upper part of each skin has a handle or stick two feet long, so that it can be worked by one man either standing or sitting. The handles are raised alternately by the blower, so that when one receives the air the other ejects it; the form is like that used on the Gold Coast, and there is a perpendicular screen of dried clay through which the nozzle of the bellows passes supplying a re-

"gular blast." In these troughs we recognize a rudimentary cylinder, and in the handles or sticks a rudimentary piston, such as seen in the more advanced form of bellows to be described hereafter. It is evident that the lower halves of the leather bags in this kind of bellows are of no use, and that the same results might be produced by simply covering the aperture of the wooden troughs at top with a loose skin fastened on in such a manner as to be air-tight, and to secure the necessary amount of play for driving the air out. Accordingly we find that amongst the Djour tribes, in long. 20°, lat. 8°, another improvement has been introduced, and is described by Mr. Petterick. "The blast pipes are made as usual of burnt clay, and are attached to earthen vessels about 18 inches in diameter and 6 inches in height, covered with a loose dressed goat skin tied tightly round them and perforated with a few small holes, in the centre of which is a loop to contain the fingers of the operator. A lad sitting between two of these vessels, by a rapid alternate vertical motion with each hand, drives a continuous current of air into the furnace." This brings us up to the stage of improvement seen in the specimen exhibited, No. 906. The tube is here constructed of wood and ornamented with a snake carved on the outside, and the two wooden air vessels with their loose skin coverings are attached to each side of the central tube so as to combine the whole in one portable apparatus. In this stage of improvement it would soon be perceived that by deepening the two kettle-drum shaped air vessels so as to form cylinders, and instead of the loose skin covering, attaching some soft yielding substance to the end of the stick above mentioned, so as to fill the cylinder in the manner of a piston, a stronger blast would be obtained; and in this improved form we find it in Madagascar, where the bellows is "a double barrelled forcing pump, consisting of two bamboos, 4 inches in diameter and 5 feet long, set up side by side as cylinders, open above and closed below, with the exception of two small bamboo tubes which converge and meet at the fire. Each piston consists of a bunch of feathers or other soft substance attached to the end of a stick; the feathers expand and fill the cylinder lightly whilst it is being forced down, and collapse to let the air pass as it is drawn up. A boy perched on a high seat works the two cylinders alternately."

It must not be supposed that in thus tracing the sequence of ideas by which this improved form of bellows has been

arrived at, the several successive stages of improvement have actually been communicated from one locality to the other in the same geographical order in which they have been described in this note. In this, as in the development of all other human contrivances which have been gradual and progressive, the successive stages by which the art has been brought to perfection have survived in different localities, so that the links of connexion, as they are seen at the present time in the survivals, are often remotely separated from one another. The connexion between the inhabitants of Madagascar and those of Sumatra and Java, has been already referred to, and it is not improbable that the particular Madagascar form of bellows has been immediately derived from the Malay Archipelago, although it might with equal probability have been derived from any other part of the extended region in which the double hand-bellows are used. The bellows used in Mindanao and elsewhere in the Malay Archipelago, and described by Dampier, more closely resemble those of Madagascar than any other; and consist of double cylinders of bamboo 3 feet long, placed side by side, and worked with feather pistons, in the manner already described. Some light may, perhaps, be thrown on the origin of this particular form, by the fact that in the sculptures on the temple of Sukuh in the mountainous district of Java, Javanese blacksmiths are represented making crises, and the double cylinder bellows are represented as being worked by another man who holds a piston upright in each hand. These sculptures are said to be of the 15th century of our era, and may possibly point to a Hindoo origin for this particular contrivance. In other parts of the Malay Archipelago the bamboo cylinder is replaced by a trunk of a tree hollowed out in the same form, and it is thus used at the present time in Borneo, Siam, and New Guinea.

CORRUGATED OR OGEE-SECTIONED BLADES.

Having now traced a resemblance between the bellows used in smelting iron over a wide area, including parts of Asia, Africa, and the Asiatic Isles, we shall be prepared to find that the forms of some of the weapons constructed by the iron-workers also present a close resemblance to each other throughout the same widely extended region. One of the most peculiar forms of blade used in Africa is the corrugated blade, having an ogee section. On each face a portion of the

blade is sunk on one side only, and on the other face the depression is on the reverse side, so that the transverse section of the blade somewhat resembles the angles of the letter **Z**. The effect of this device, when adapted to the blades of arrows or javelins, is to give the weapon a rotatory motion on the principle of the screw propeller, the action being merely reversed, and, instead of the screw communicating its action to the surrounding medium and thereby propelling itself along, the air in this case impinges upon the flanges of the screw and causes the arrow to rotate, by which means the accuracy of the flight of the arrow is increased, like that of a rifle bullet shot from a gun. This form is particularly noticeable in the heads of the Mandingo arrows, West Africa, Nos. 896 and 897, Fig. 97, in which the screw form is very pronounced; but it is also seen on the blades of the Caffre assegais of South-east Africa, Nos. 901 and 902, Fig. 98, and in the arrows of the Dor and other tribes of the White Nile, discovered by Petherick, Nos. 893 and 894, Fig. 99. Nor is the ogee form confined to the blades of arrows in which its use is apparent, but it is also seen in the blades of knives and short swords, as in Nos. 890, 891, and 892, from the White Nile, Nos. 898, 899, Fig. 100, from the Nupi country, West Africa, and in No. 900, from the Fan negroes of the Gaboon, in West Africa. It is also imitated in the wooden spear of the Kaffirs, No. 903, showing that it is not a form necessitated or adopted for convenience by the worker in iron only; and it is also used in the axe blades of the Bechuanas of South-east Africa, Nos. 917 to 919.

Africa.

From what has been already said it will be anticipated that this form is not confined to the African continent, but exists also in India. Accordingly we find it in the head of the arrow, No. 887, Fig. 101, from Ganjam in Central India; and also in the little iron spear points which terminate the shaft of the axe handle of the Khonds, hill tribes of Central India, Nos. 888 and 889; it is also seen in arrow blades exhibited in the India Museum from Tinevelly in Southern India, and from Akyab in Arracan. In the United Service Institution there is an arrow blade of this description, said to have been captured from the enemy in the Cabul war. I have not found any blade exactly like this in specimens from the Malay Archipelago, but the spear blade attached to the blow pipe from Borneo, No. 1005, is constructed much on this principle, the central ridge dividing the faces, being excentric and reversed on alternate sides. In the short swords from the Caucasus, No. 904, Fig. 102, it will be seen that the groove which runs along the face of the blade

India.

Malay.

Caucasus.
Saxon and
Frankish.

Of Stone.

North America.

is not in the centre, but a little on one side, and that on the other face, which is turned to the wall, is towards the opposite edge, it, in fact, represents the depression already described in the other specimens from India and Africa, narrowed to the dimensions of a groove, in the same manner that the concave sides of the Japanese spear heads, Nos. 834, 835, and 836, become reduced to a narrow groove. This form is persistent in all the swords that are obtained from the Caucasus. Now the iron blades of the Saxon and Frankish spears discovered in the graves in England and France, Fig. 103, have frequently the same peculiarity, and are in fact formed exactly on the model of the African and Indian arrow and lance heads. The illustration here given is taken from "Pagan Saxondom," by J. Y. Akerman, who was the first to draw attention to the resemblance between the Hottentot and Saxon spears. No. 905 A and B are casts of two sides of an iron Anglo-Saxon spear head, obtained by Professor Rolleston, F.R.S. The Saxons and Franks are amongst the earliest workers of iron in Europe, and they migrated from the east. We may, therefore, with great probability look for evidence at some future time which will connect the ogee blades used by these races with those of India, and they no doubt used a double bellows of the same kind as the other early iron-workers by whom these blades are employed. Had arrow or spear heads of this description been found amongst the bronze or iron antiquities from ancient Egypt, as has been affirmed to be the case, it would be a matter of great interest, connecting both the head and the spud at the end of the African lance with that early African culture; but I cannot ascertain that anything of the kind has been discovered in Egypt. It has been also said that some of the chert arrow heads, discovered at the Cape of Good Hope present this peculiarity. One I have seen which had certainly a twist in the blade as have many stone arrow heads from other countries, on account of some accidental imperfection in the original form out of which it was made. No doubt a simple flake with unequal facets if used as an arrow head, might produce a rotation of the arrow to which it was attached; but having carefully examined all the African stone arrow heads I have had an opportunity of seeing, I cannot say that I have ever observed anything that could with certainty be said to have been *designed* for this purpose. One other outlying region in which arrows having an ogee section have been discovered remains to be considered. The five arrows No. 905, have shafts of reed, the two feathers are laid on

96 97 98 99 100 101 102 102 102

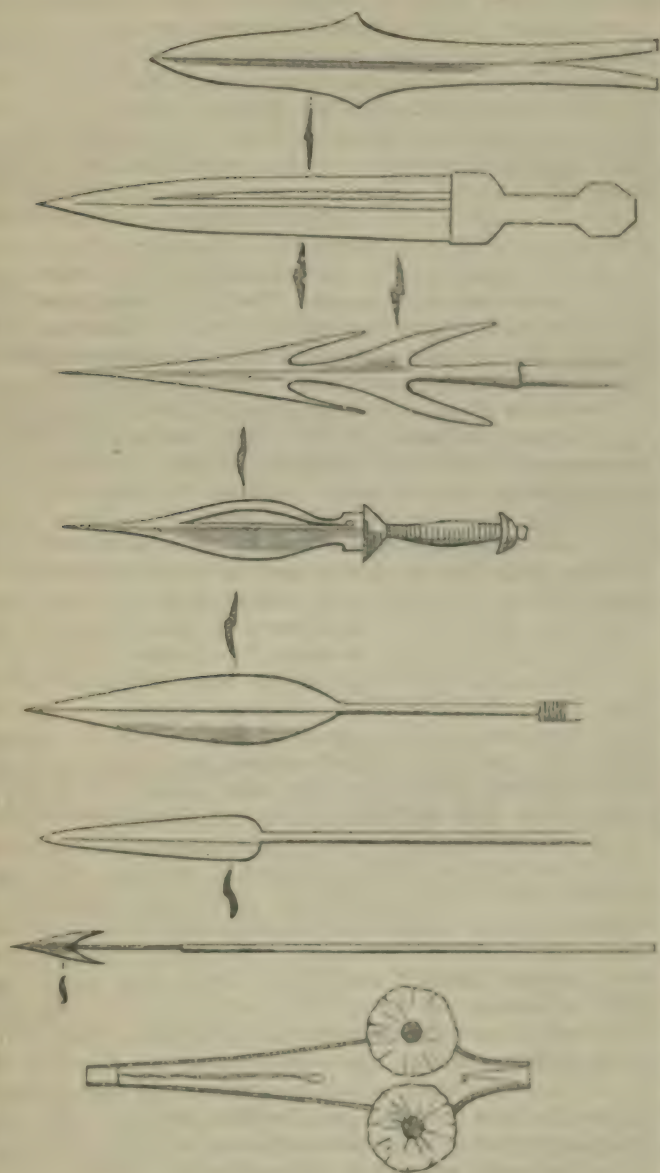


PLATE X.



flatly, like those of the Esquimaux already described. The iron heads with their thin iron fore-shaft are African in outline, and would be pronounced African, were it not for the peculiar owner's mark inscribed on the heads of some of them, which are distinctly Esquimaux in character. (One of them is exhibited in the collection of owner's marks at the west end of the room.) These barbed heads are slightly and somewhat rudely grooved on alternate sides, like the African and Indian arrows above described. They belong to the bow and quiver, No. 267, the former of which has a copper wire band of interlaced work round the centre. But what is of special interest in connexion with these arrows is, that Mr. Lewis Morgan, in his "League of the Iroquois," says that "flint arrow heads are occasionally " found amongst the remains of the Iroquois with a twist, " to make the arrow revolve in its flight." Having however examined some hundreds of flint arrows found in various parts of the United States, I have never seen anything in their form resembling this which could with certainty be said to be the result of design on the part of the fabricator. Interesting, therefore, as it might be to find so peculiar a contrivance developing itself independently in a region so remote from the head-quarters of this particular form of arrow-head, and connecting as it would the implements of the stone age of that region with those of metal, it would not be safe to regard the fact as established until confirmed by additional evidence.

PIER CASE 33.

SPECIMENS ILLUSTRATING THE GEOGRAPHICAL DISTRIBUTION OF CORRUGATED OR OGEE-SHAPED BLADES.

- 887, Fig. 101. ARROW with iron barbed ogee-sectioned blade. Ganjam, India. Five feathers.
- 888, 889. Khoond AXES of the hill tribes of Central India furnished with small iron points with ogee blades.
890. Neam-Nam KNIFE with ogee blade, White Nile. Obtained by Mr. Petherick in 1858.
- 891, 892. Neam-Nam, ogee-bladed KNIVES. Obtained by Mr. Petherick in 1858.
- 893, 894, Fig. 99. ARROWS, with iron leaf-shaped ogee-bladed heads, White Nile, Central Africa. Obtained by Mr. Petherick in 1858. They have no feathers; one has a notch and the other a cavity at the end.

895. ARROW with barbed ogee-bladed iron head ; no feathers. Notches at end. White Nile.
- 896, 897, Fig. 97. ARROW with barbed ogee-bladed iron heads, the twist more fully developed than in the preceding specimen. No notches. Mandingo, West Africa.
- 898, 899, Fig. 100. Ogee-bladed daggers. Nupi tribe, West Africa.
900. Iron leaf-shaped short SWORD with ogee blade. Fan Negroes, Gaboon, West Africa.
- 901, 902, Fig. 98. Caffre ASSEGAIS, with iron leaf-shaped ogee-bladed heads. East Africa.
903. Wooden SPEAR with ogee blade ; the sunken portion blackened with fire on alternate sides. South-east Africa.
- 904, Fig. 102. KNIFE or short SWORD from the Caucasus ; the groove on the blade is a little on one side, and does not correspond on each side, but alternates, as in the blades above described, showing that it is derived from the ogee form. It is constant in all the Caucasian knives.
905. Five ARROWS with iron ogee blades, the shafts of reed, the feathers set on flat, like those of the Esquimaux, and bound with sinew. Some of the blades are marked with the owner's mark peculiar to the Esquimaux. One of them is in the case containing owners' marks, at the west end of the room. This belongs to the bow and quiver, No. 267.
- 905 A and B. Casts of the two sides of an iron Anglo-Saxon SPEAR-HEAD. Obtained by Professor Rolleston, F.R.S.
- 906, Fig. 96. Double BELLOWS, Central Africa, with a wooden tube attached, used by the hand by closing and pressing alternately the valves with the fingers. Bellows, somewhat resembling this, are used throughout Africa, India, and the Malay Archipelago.


OBJECTS ILLUSTRATING THE DEVELOPMENT OF THE AXE, HALBARD, GLAIVE, AND OTHER COGNATE WEAPONS.

Any attempt to give a tolerably complete history of the development of the axe would be out of the question. A very extensive museum would be required to illustrate this subject alone. The axe came in with the commencement of the Neolithic period, and a considerable portion of the prehistoric series will be devoted to this weapon. The axe is a composite weapon, as we shall see hereafter, resulting

from the combination of two distinct implements, the hand Club and axe. hatchet, or celt, and the club. This combination is exemplified by the manner in which savages employ the metal blades of whatever form, which they obtain from Europeans, inserting them into the heads of their clubs. Examples of these are shown in this series, Nos. 907 to 916, in which this practice is shown in specimens from Australia, South America, North America, and Africa. A plain club from each of these regions is shown, and another, with a European blade of some kind, either spear point, hatchet, or spike, inserted in the head. Nos. 915 and 916 are iron axes from Central Africa, the blade being of the simplest form, and which might serve either as a spear point or hatchet, according as it might be used with the point or broad end. No. 915 has an ogee section. The series of Bechuana axes, Bechuana. Nos. 917 to 926, show a sequence of development based upon the spear point stuck into a club, of which No. 917, Fig. 104, is an example; this has also the ogee section common to the spear heads of that region. Nos. 918 and 919, Figs. 105, 106, are modified forms of the same weapon, in which the ogee section is still retained, the form of the back of the blade being modified. In the succeeding specimens the ogee is lost and the flanges or barbs of the arrow-shaped axe are gradually lengthened, Fig. 107. No. 811, already described, upon the south wall between the windows, shows this form applied to the purpose of a hoe, and is from the White Nile. Nos. 927 to 932 and 933 to 945 are various kinds of African axes; being a miscellaneous collection from different parts of Africa, in which the varieties of each form are wanting; they will hardly repay the trouble of a description. In nearly all the club-shaped form of the handle is retained.

The whole history of the axe in different countries consists in a gradual expansion of the cutting edge, the several varieties being adapted to the several distinct purposes for which their forms are most serviceable. For use as a hatchet for cutting wood the long narrow axe is the most useful, whereas for war, where force is not so much an object as the certainty of striking the enemy in a vulnerable part, the broad axe with the expanded crescent-shaped edge is preferable. In the axes of the African negroes, as in those of the Franks and Saxons of early Europe, an infinite variety of forms are seen; in some the edges expand upwards, in others downwards, in others both ways, producing a kind of - shaped axe, of which examples are seen in No. 928, Fig. 108, from the Bassuto country, South Africa, and No. - shaped axes.

Crescent-
shaped axes.

931, from the Khonds of Central India. These correspond in form to some of the axes used by the Franks and Saxons, as for example the *Francisca* (*à lame ouverte*), described by the Abbé Cochet, and of which a remarkable specimen may be seen in the desk cases to the east end of the room, together with others of the same form found in England, and which appear to have continued in use until the 11th century. This  shaped form was used in Switzerland and in Venice in the 16th century, as may be seen by examples in Meyrick and in Demin's History of Arms. In others the edge expands into the form of a crescent, the back next to the staff being formed into two small crescents, which represent the original sides of the axe, as in No. 947, Fig. 109, probably a horseman's axe of the time of Elizabeth, and in the following example, No. 948. This expansion of the edge is still further shown in the specimens on the opposite screen, No. 983, Fig. 110, a German pole-axe of the time of Henry VI., and in the Indian pole-axe, No. 982 of the same form. Here the edge has been brought back to the staff and fastened to it above and below, a precisely similar form to this was used in ancient Egypt, of which examples may be seen in the British Museum and in the Louvre at Paris, Fig. 111. This kind of crescent-shaped axe was used by the Turks and Persians, as well as by the nomadic inhabitants of Central Asia. It appears to have come into use in Germany in the 15th century, and was commonly employed in England in the 16th century. Amongst the Khonds, hill tribes of India, the form of the axe varies continually, and presents a very great variety of forms, all of which are connected, as may be seen in the engraving representing Khond weapons in General Campbell's account of that race. Barbosa also mentions the great variety of the patterns of axes used by the Moors at Ormuz. No. 952 is an adze or axe from Mindanao, in the Philippine Isles; the blade is constructed in such a manner that by taking it out and turning it in the socket it can be used as an adze or axe as may be desired. A similar contrivance is used by the Dyaks of Borneo, and also by the Banyai, an African tribe on the south bank of the Zambesi, somewhere about lat. 16° S. and long. 30° E., one of which is figured in Mr. J. G. Wood's Natural History of Man.

The axe in its earliest and simplest form is known as the celt. If we may judge from the way in which it is employed by modern savages, it was probably used as a tool. In the later stone age and in the bronze age the forms of

many of them appear to indicate that they were frequently employed as weapons, especially in North Germany and Scandinavia. Of these, however, I shall speak more at length hereafter. The axe is used at the present time as a weapon in most parts of Africa, though not so commonly employed as the other weapons that have been mentioned. Du Chaillu speaks of it as an effective weapon amongst the Fans; and Barth says it is used on the Shara, near Logon, amongst the Munga, the Unyamuesi, as well as in South Africa. They are used as a medium of exchange before they are adapted to their respective uses, and even afterwards they are passed from nation to nation in this way, which is sufficient to account for the manner in which these various forms have spread over the continent. The axe was used as a war weapon in ancient Egypt. The Greeks and Romans did not employ it in war, although it is mentioned as a weapon by Homer. On Trajan's column an axe with an expanded blade is seen, but only in the hands of workmen. The Assyrians rarely used it as a war weapon. It was the special characteristic of Asiatic nations, who for that reason were called *Securigeræ Catervæ* (Smith's Dict.). Herodotus says that they were carried by the javelin men amongst the Massagetæ of Central Asia, and they were used by the Turkish and Persian horsemen of mediæval times, who carried a hatchet at their saddle bow as lately as the 17th century; and it was used by the Slavonians and Hungarians. It was without doubt a Celtic weapon, and it was used by the Saxons and Franks, more especially the latter, who no doubt brought it with them from the East. Although used by the Saxons, both Wright and Akerman concur in saying that it is of rare occurrence in the Saxon graves as compared with the spear and knife, but is more frequently found than the sword. But the *Francisca* was to the Franks what the *sax* or knife was to the Saxons, and it was used for throwing as well as for striking. An iron axe was found in the grave of Childeric, at Tournay. It was used by the Normans attached to a long handle, and is one of the commonest weapons represented on the Bayeux tapestries. Monstrelet says that in the time of Joan of Arc the English carried hatchets in their girdles. It was with a battle-axe that Robert Bruce, at the battle of Bannockburn in 1314, clave the skull of an English champion down to the chin. No. 962, Fig. 112, is a Scandinavian axe of the commencement of the 17th century, said to have been found on the field of Kringelen in Norway; but these axes, according to Klemm, appear to be used by the countrymen in Norway

Processional
axes.

at the present time; the handle is curved back so as to enable it to fit the back, and it is generally carried by being slung upon the back by a strap. Nos. 963 to 966 are German miners' axes, called *bergbarthe*, one of which has the date 1675 upon it. These axes, according to Klemm, were formerly used by the miners in the defence of cities, and particularly in the defence of Freiberg in 1643; but they are now used only as processional axes upon state occasions, and have considerably varied in form, being constructed of brass as well as of iron. No. 966, Fig. 113, is one of these axes, both blade and handle of which are of wood in one piece, ornamented with the devices appertaining to the guild to which it belonged. Thus modified and scarcely to be recognised as the semblance of a weapon, it may be regarded as the last vestige of the war axe. The axe, like the spear, was in ancient times used to mark a boundary. Of this we have an instance in the charter of Canute to Christ Church, Canterbury, which I quote from Mr. Akerman's work,

Cereemonials.

granting the harbour of Sandwich and the dues thereof on either side as far as a man standing on a ship at flood tide could cast a taper axe. This custom of throwing an axe to mark a boundary has survived in some parts of England to our own time. The axe bound up in the fasces and carried by the Lictors before the Roman consuls and others, affords another example of the use of this instrument for state ceremonial purposes. In the consular coins it is represented crowned as a badge of office. In ancient Egypt it passed into the region of mythology and became the symbol of the Deity, and from thence into the hieroglyphs inscribed upon the ancient monuments, in which it stands for the word God. Combined with the spear in mediæval times the axe became a *halbard*, a word derived from the Teutonic *alle-bard*, signifying "cleave all."

Halbard.

In this form it was known in Germany and Scandinavia in the earliest centuries of the present era; but was not used in France until the middle of the 15th century, when it was introduced by the Swiss. In its earliest form it dates from the middle of the 14th century to the commencement of the 16th century, and is represented by No. 984, in which the axe is broad and massive and the spear point thick and solid, and it appears to have been allied in form to the bill, which was introduced about the same time. In the 16th and 17th centuries the spear point became longer and more taper, and the axe more slender and concave in the edge. In the 18th century, as it became a conventionalised implement of warfare, the axe resumed its original

form and the spear assumed a leaf-shape form which it retained in the hands of the officers and serjeants of our own army until the commencement of the present century, when it was finally discontinued. The *Bill* appears to have been introduced in the 15th century, and in its earliest form it is represented by No. 977, of the reign of Henry VI. Subsequently the bill became converted into the form represented in No. 985, which is of the time of Henry VIII., and this form was retained until it was disused. Robert Barret, in 1598, speaks of the good service done by these weapons in former times, but commends the pike in preference. The *Glaive* is a long slender weapon, derived in early times from the custom of fastening the sword on to the end of a pole, and was used in the 15th and 16th centuries. The *Gisarme* is a glaive with a slender spear point attached to the back of it; it is still used in China, and in Dahomy a *gisarme* is used at the present time which has evidently been derived from the European weapon. The *Voulge* is a kind of pointed battle-axe used by the Swiss in the 14th century, and probably derived from the pole-axe. It appears to be intermediate in form between the *halbard* and the *bill* or *glaive*. Whether the war scythe or the glaive was the earliest weapon it may be difficult to determine. It is not improbable that the use of the whole of these several varieties of weapons arose from the custom adopted by the peasants in times of revolution or hasty arming of the people, of fastening their agricultural implements on to the ends of poles to serve temporarily as weapons. An example of this is seen in the series of revolutionary weapons at the west corner, amongst which there is a scythe sword used by the Hungarian peasants in 1848, and which resembles in every respect a war scythe of the 14th century figured by Demmin. But whatever their origin it is certain that the whole of these mediæval weapons present a great variety of allied forms, and in a well arranged collection of them, there could, together with the *ranceur*, *partisan*, and *spetum*, without doubt be traced links connecting them with a common prototype, probably a glaive or a war scythe of the 14th century. The *Pike* is one of the earliest and latest hand weapons employed by the infantry. The long pike appears to have been introduced into Western Europe by the Switzers in the 15th century, when the infantry adopted the four-deep formation, length being necessary to enable the rearmost rank to reach beyond the front rank. According to Meyrick the length of the pike in 1645 was 15 ft. besides the head,

in 1670 it was 18 ft. altogether, and in 1680 15 ft. The *pike* continued in use until the introduction of the bayonet attached to fire-arms, which rendered it no longer necessary to employ a separate weapon for the purpose. It was abolished in France by Royal ordinance in 1703, and about the same time it was discontinued in England. It was, however, still retained by the officers and serjeants until the commencement of the present century, and in its latest form it is shown in Nos. 994 and 995 of this collection.

SCREEN 34.

OBJECTS ILLUSTRATING THE DEVELOPMENT OF
THE AXE, HALBARD, GLAIVE, AND OTHER
COGNATE WEAPONS.

907. CLUB with enlarged head. Australia.
908. CLUB similar to the last with an European lance blade stuck into the head to form an axe.
909. MACANA. Square-headed club used by the Indians in Guiana. South America.
910. MACANA, with an European axe-blade stuck into the head of it. These blades are sometimes of stone.
911. North American ball-headed CLUB called *Pagamagun*.
912. CLUB of the same form as the last, flattened, the head as well as the shaft tubular, and having an European iron spike stuck into the head.
913. Central African CLUB with an enlarged head.
914. CLUB of the same form as the last with an iron axe blade stuck into the head.
915. African CLUB with an iron axe-blade of native workmanship stuck into it.
916. AXE similar to the last with an ogee blade. Africa.
- 917, Fig. 104. Bechuana AXE with a club-shaped haft, the blade a pointed lance head of native workmanship, with an ogee blade. South Africa.
- 918, Fig. 105. Bechuana AXE of the same shape as the last, the blade slightly modified at back and having an ogee blade.
- 919, Fig. 106. Bechuana AXE of the same shape as the last, the blade modified into the form of a broad arrow with ogee section.

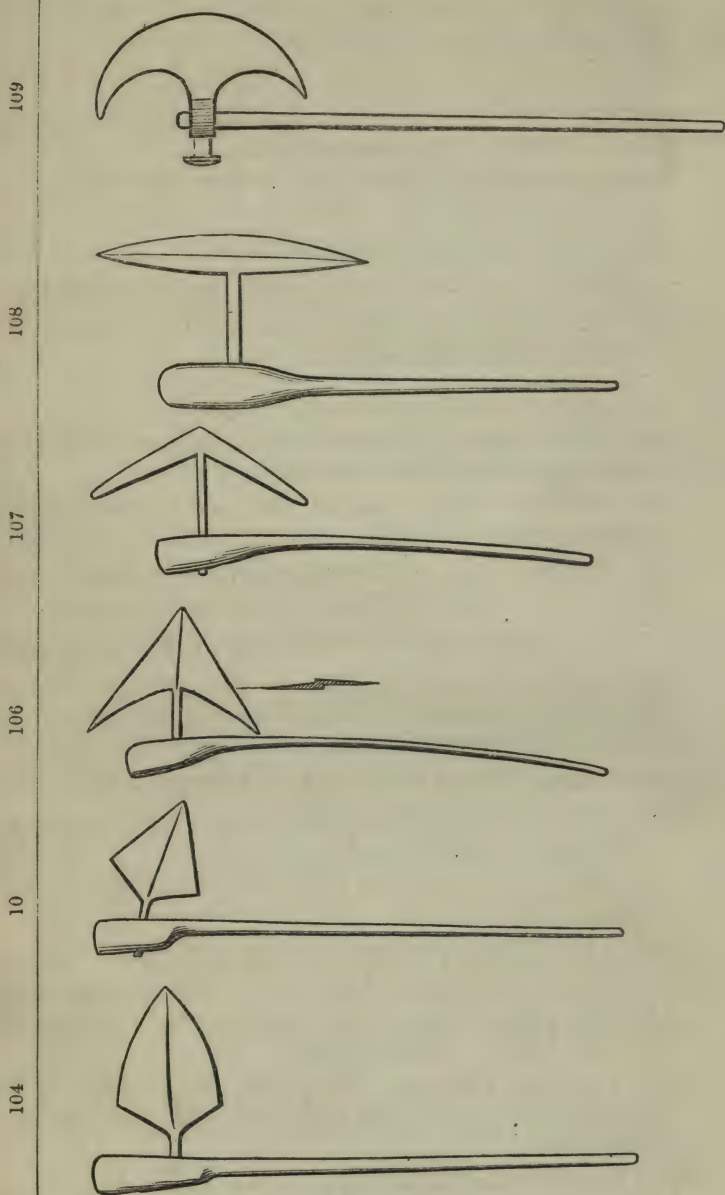





PLATE XI.



920. Bechuana AXE of the same form as the last, but the ogee is lost in this and the subsequent specimens.
- 921 to 926, Fig. 107. Bechuana AXES of the same form as the last, showing a gradual expansion of the barbs of the blade.
927. AXE. Central Africa. A similar axe to this from Bornou is figured by Klemm.
- 928, Fig. 108. AXE with a  shaped blade (Bassuto, South Africa), called *Silepe*, used in the region of the lakes discovered by Livingstone. One of them from the armoury of Mosesh was shown at the National Exhibition amongst objects from Natal.
929. Bechuana AXE, the blade prolonged upwards, the head of the haft converted into the representation of a human head.
930. AXE of the Djibba negroes. The haft above the blade divides into two prongs shod with iron; the prongs are said to be used for gouging out the eyes of the enemy. White Nile.
- 931, 932. Khond or Circar BATTLE-AXE of the  shape form somewhat resembling No. 862.
933. AXE. Africa.
934. AXE. Africa.
935. AXE. Africa.
- 936, 937. AXE of the Fan negroes. Gaboon, West Africa, with owner's marks, one resembling an inverted , the other a straight line with a semicircle adjoining it.
938. AXE. Africa. Somewhat resembling in form an Egyptian bronze axe found on a mummy of a Queen of the 17th dynasty, B.C. 1900, but differently hafted.
939. AXE. Africa.
- 940 to 945. AXES of various forms from West Africa, the blades of which appear to have been formed out of European metal.
946. AXE, consisting of a fish bone set in a split cane, the genuineness of which is doubtful.
- 947, Fig. 109. AXE with a crescent-shaped blade and hammer head, probably a horseman's axe of the 16th century.
948. AXE of somewhat similar form to the last. Probably European.
949. Khond AXE. Indian.

950. AXE with a \neg shaped blade. Indian.
951. WAR HAMMER (*Martel de fer*). Probably India.
952. AXE. Mindanao, Malay Archipelago. The blade constructed to shift so as to be used either as an axe or adze.
953. AXE. The blade inlaid with brass.
954. Modern English boarding AXE. The spike is to fix into the ship's side in climbing the sides of a vessel.
- 955, 956. Iron TOMAHAWK, with pipe attached, of European construction, for use by the North American Indians.
957. A two-pronged implement, probably an elephant goad. Indian.
- 958 to 961. Stone ADZES. Used on state occasions, the stems elaborately carved. High Island.
- 962, Fig. 112. Norwegian AXE. Said to have been found in the field of Kringelen in Norway. They are still used in Norway by the countrymen, the curved staff is to enable it to fit the back of the owner upon which it is slung by a strap.
963. German miner's AXE. The blade pierced in an ornamental pattern.
964. German Miner's AXE. The shaft inlaid with ivory, and having the date 1675 upon it. They are used only on state occasions.
965. German Miner's AXE. Being a small dwarf blade of brass.
- 966, Fig. 113. German wooden processional AXE. The haft and blade of wood in one piece, ornamented with an elk and cross mallets.

SCREEN 35.

WAR AXES, BILLS, HALBARDS, GLAIVES, TWO-HANDED SWORDS, &c., EUROPEAN AND ORIENTAL.

967. GLAIVE with straight double-edged sword blade, 2 ft. 4 in. in length, attached to a staff having a ball-head 3 in. in diameter. Locality not known.
968. Iron GLAIVE. Shaft and blade of iron in one piece, the blade curved, 9 in. long, the shaft 1 ft. 7½ in. long and ¾ in. thick. Central Africa.
969. Malay GLAIVE. Blade of iron, 1 ft. 2 in. long, the shaft of wood 1 ft. 10 in. in length.

970. Chinese GLAIVE. The blade curved, single-edged, 1 ft. $7\frac{1}{2}$ in. in length. the shaft 1 ft. 4 in. in length.
971. Chinese GLAIVE. The blade curved, single-edged, 1 ft. $5\frac{3}{4}$ in. in length, with guard.
972. Chinese GLAIVE. Single-edged blade, 1 ft. 3 in. in length.
973. GLAIVE. Cochin China. The blade curved, single-edged, 2 ft. long, increasing in size towards the end, with guard similar to that of No. 905. Mounted on a bamboo shaft.
974. DARAI. Garo tribe, Assam. Of iron in one piece, blade 2 ft. 5 in. in length, single-edged, and slightly curved, the edge on convex side.
975. Indian DOUBLE-HANDED SWORD. The blade 3 ft. 3 in. in length, double-edged, the handle 1 ft. 7 in. in length, furnished with three large brass knobs.
976. European DOUBLE-HANDED SWORD. 15th century. Blade 3 ft. 5 in. in length, handle 2 ft. 2 in. in length with curved guard 1 ft. 5 in. in length.
977. BILL. 15th century. Blade, 2 ft. 8 in. in length.
978. WAR CHOPPER of the Andami Nagas, Assam. Blade 9 in. long, triangular, increasing to $3\frac{1}{2}$ in. in breadth at the end, single-edged, ornamented with dyed hair attached to handle.
979. HATCHET. The blade of peculiar form somewhat resembling the New Zealand *Pagee*, the handle of iron of the same piece as the blade bent round a wooden shaft and ornamented with hair at the end. Probably Assam.
980. Khoond AXE with long curved blade. India.
981. Gomsur or Khond AXE, somewhat resembling Nos. 865 and 866, but having a concave edge.
982. Khond AXE called *Ghorassa*. The blade crescent-shaped, also used by the rural police in India.
- 983, Fig. 110. POLE-AXE. German. 15th century. The blade crescent-shaped.
984. German halbard. 15th century.
985. English BILL. 16th century.
986. Swiss HALBARD or pole-axe, the blade has a twist so as not to lie in the same plane as the handle. Probably for use on ramparts.
987. English HALBARD. 16th century.

988. HALBARD HEAD. 16th century.
989. HALBARD. Commencement of 18th century.
- 990, 991. HALBARDS. End of 17th century.
- 992, 993. SPEAR. End of 17th century.
- 994, 995. Serjeants' SPEARS. 19th century.
996. Indian GLAIVE, the blade triangular, three brass knobs on socket.
997. SPEAR with an iron blade, 9 in. long, inserted into a slit in a pine shaft and bound round with string, having a horse-hair haft on the shaft beneath the blade, shaft 8 ft. 6 in. in length. Probably from Northern Asia.
998. Short JAVELIN, probably used for state purposes. France. The shaft of different coloured woods inlaid with ivory.
999. WAR HAMMER (*Martel de fer*).

SCREEN 36.

SOUTH WALL.

BLOW-PIPES.

South America. This implement consists of a simple tube through which small poisoned arrows are blown by the mouth. It is used in most parts of South America. Nos. 1000 and 1002 are South American blow pipes, the latter from the Macoushie Indians. Mr. J. G. Wood in his *Natural History of Man*, has given a very detailed and accurate description of the construction of this weapon from the original observations of Mr. Waterton. They are of two kinds, the *Zarabatana*, a word obviously derived from the European term for it, *Sarbacane*, and probably introduced by the Spaniards, this is a long heavy weapon; the other, a thinner, slighter implement is called *Pucuna*. The latter is constructed of two portions, the inner reed called *Ourah* consists of the first joint of the *Arundinaria Schomburgkii* which grows on the sandstone ridge of Upper Orinoco. This is an exceedingly slender reed, too slight to be used without some external protection, and it is therefore inserted in an outer tube called the *Samourah*, which consists of the stem of the palm *Ireartia Setigera*, the interior pulp of which is previously removed, and the spaces between the inner and outer tube tamped with a black wax made by a wild bee and mixed with a pitchy substance obtained from trees. A fore-

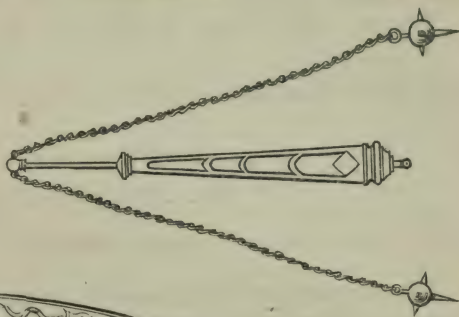
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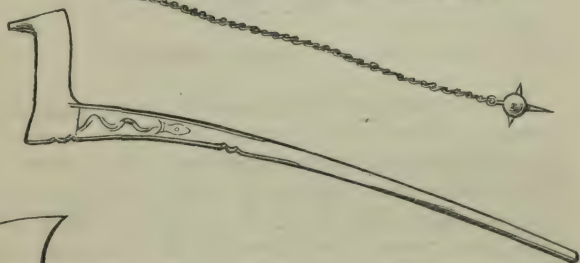
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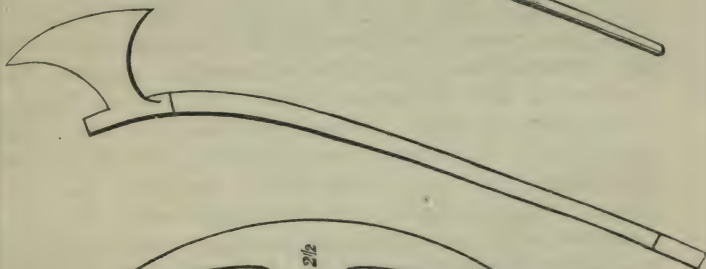
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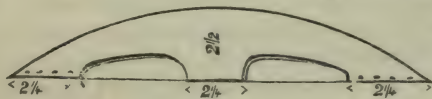
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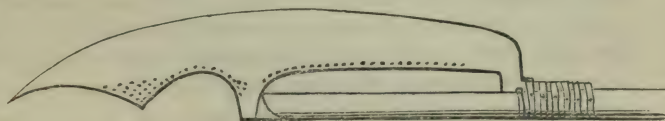
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sight made of the *Acuero* seed is added to the tip, and a back sight is formed by fixing on to the near end two incisor teeth of the *Acouchi*. The *Zarabatana* is formed of two separate pieces of wood in each of which is cut a semi-circular groove by means of the incisor teeth of rodents, so that when they are placed in contact with each other they form a long wooden rod pierced with a circular bore. The two halves are bound together by means of long strips of *Jacitara* wood, wound spirally round them, as shown in No. 1000. The arrow is made of the leaf rib of the *Coucourite* palm, wound round at the near end with wild cotton in order to make it fit the bore; it is brought to a point by scraping it between the sharp teeth of the *Pirai* fish, a portion of the jaw of which is seen attached to the quiver for this purpose. The arrow is poisoned, and immediately before hurling it, the Indian places the point between two of the teeth of the *Pirai* fish and turns it round between his fingers, by this means he cuts the shaft nearly through near the point, so as to leave a mere thread of wood attaching the point to the shaft. On striking the animal the poisoned point snaps off and is left in the wound. In other parts of South America instead of a cotton ball on the butt-end of the arrow, a flat piece of bark is twisted round and fastened to the base of the arrow so as to form a hollow cone, the circumference of which fits the tube and becomes filled with the air that is blown into the tube. This almost exactly resembles the contrivance used with the arrow in Eastern India, some of which are attached to the blow-pipe from Silhet, No. 1009. A piece of bark is also attached to each side of the shaft and slightly twisted so as to cause it to revolve in the air. Attached to the blow-pipes may be seen the basket to contain the cotton for the ends of the arrow and the quiver to contain the arrows which are kept side by side on a flexible framework which is rolled round on a wooden stem, and inserted into the quiver. Condamine, in 1745, says that the Yameos shoot 30 or 40 yards with them; but Mr. Wood makes their range upwards of 100 yards, and says that the Indians can shoot birds with them in the trees where no shot-gun can reach. According to Mr. Clements Markham, they are used by the Uaupes inhabiting the shores of the River Uaupes, a tributary of the Rio Negro in Brazil, by the Catauixis on the Purus River, by the Cholones of the River Huallaga, where it is made of the Chonta Palm, and called *Pucuna*, by the Mayorunas or Barbudos, a white race said to be descended from the Spaniards, living between the Maranon, Ucayali, and Yavari

Rivers; and by the Zaparos who wander between the rivers Pastaza and Napo, and who carry them in bamboo tubes slung over their shoulder, which appears to indicate another variety of the weapon. Klemm says, in Guiana the Maiongkons and Guinaus make a blow-pipe from a reed which grows very straight, and can be constructed without much preparation; but the Mainas make their shorter pipe of two pieces of Chonta Palm, which they hollow with swines' tusks, and polish with the rough palate of a fish; others, he says, carry still shorter blow-pipes. Blow-pipes are also used by the Darien Indians, who inhabit the narrowest part of the isthmus of Panama. The blow-pipe is used in Japan, and is figured in Siebold's plates, but I cannot ascertain that it is used by the Polynesian Islanders or in Australia. Pigafetta, in 1520, mentions *Sarbacanes* of reed in the islands of Cayayan and Palawan, near Borneo, where the arrows are described as large wooden darts more than a span in length, headed with a harpoon, and pointed with fish bone, others are pointed with a sharp piece of bamboo. "To the end of the *Sarbacane*," he says, "they fasten an iron head when their arrows are expended, and use it as a lance." Whether we are to infer from this that they fixed the lance head into the aperture of the tube appears doubtful; if so, the description given by Pigafetta would appear to denote a stage in the development of the bayonet of the blow-pipe which corresponds to that which preceded the introduction of the bayonet attached to European firearms. The blow-pipe of Borneo, called *Sumpitan*, Nos 1005 to 1007, is of one piece, and constructed of various kinds of wood, bored with great care, like a gun-barrel, and has an iron blade bound on to the end on one side of the barrel, so that the weapon can be used with the blade attached to it like a European bayonet. The arrows are made of the thorn of the Sago Palm, and have a conical piece of pith or soft wood attached to the barbed end, resembling that of the South American arrow already described. As a rule they are solid instead of hollow, but in some, the cone is hollow, and have also wing-like appendages along the shaft, like the South American arrow. The arrows are also poisoned, and they are carried in a bamboo quiver; the poison is said to be dangerous when new, but it is not usually fatal to man. The blow-pipe is used by the aborigines of Singapore, who live in huts in the trees. Père Bourrien describes these people, who are called Mautras, in the interior of the Malay Peninsula. They are the aborigines of the country, negrettos, with frizzled hair, and live in houses at an eleva-

Japan.

Malay Archipelago.

Malay Peninsula.

tion of 25 ft. from the ground. The Malays call them Oran Banua, meaning the aborigines. Their blow-pipe, which they call *Tomeang*, like that of some of the tribes of South Africa already described, is made of "two bamboo tubes, " one inside the other; the outer bamboo is ornamented " with figures, and is generally coloured dark at the extremity, and white towards the mouth-piece. Into the " bore of the inner bamboo at the mouth-piece is placed an " arrow, several inches long; a small piece of wad is then " placed behind it, and by a strong puff of the breath, the " arrow is sent some fifty or sixty yards." The points of the arrows are poisoned with the *Hipobatang* already described. The blow-pipe of Ceylon, No. 1008, is usually painted in red Ceylon. black, and yellow bands, probably representing the binding of rattan or other material with which the two halves were bound together formerly. This implement is also used in Silhet, in Bengal, as may be seen by the specimen, Bengal. No. 943, from that locality, and probably on both sides of the bay of Bengal. The arrows of the Silhet blow-pipe are constructed on the same principle as some of those already described, with a hollow conical base to receive the air. From the foregoing remarks it will be seen that the distribution of the blow-pipe is spread over two distinct areas in South America and Southern Asia. Whether the knowledge of this weapon has passed from one to the other at any former pre-historic period, may be open to doubt; the peculiar construction of some of the arrows, the fact of their being universally poisoned, and the presence in both regions of blow-pipes constructed of two tubes, one within the other, might be taken as an argument in favour of a former connexion. On the other hand, I am not aware of this instrument having ever been used in any of the Polynesian Islands intervening between Japan and the South American coast. To the best of my belief, it is not used in North America, Northern Asia, Australia, or Africa. According to Demin it appears to have been known in France and Italy in early time. The word *Sarbacane* in French, Europe. and *Cerbotana* in Italian, being derived according to this author from *Carpi* in Italy, the place where they were manufactured, and *canna* a reed. By the Spaniards they were called *Cerbatana*; by the Portuguese, *Gravatana*; by the Germans, they were known by the term *Blasrohr*; and in England they are familiar to most boys by the name of *Pea-shooter*.

SCREEN 36.

SOUTH WALL.

BLOW-PIPES.

1000. BLOW-PIPE. South America. 6 ft. 4 in. in length.
1001. QUIVER for blow-pipe, with gourd to contain cotton to fasten on to the arrows; the arrows of grass stalks.
1002. BLOW-PIPES. Macoushie Indians, Essequibo river, South America. 3 ft. 3½ in. in length.
1003. QUIVER and ARROWS for the Macoushie blow-pipes, with basket to contain wild cotton and a piece of the jaw of the pirai fish for sharpening the arrows attached to quiver.
1004. One of the ARROWS of the Macoushie blow-pipe, with cotton attached and poisoned, in glass tube.
1005. SUMPITAN or blow-pipe. Borneo. With iron bayonet and sheath. The bayonet has an excentric ridge which alternates on the opposite side. 5 ft. 4 in. in length, with 8-in. blade.
1006. A QUIVER for sumpitan, with arrows and gourd to contain the poison.
1007. SUMPITAN. Borneo. With a leaf-shaped iron bayonet expanding at the base. 6 ft. 11 in. in length, with 1-ft. blade.
1008. BLOW-PIPE. Ceylon. Painted in red, black, and yellow bands representing, probably, the binding with which some of them are surrounded. 5 ft. 4 in. in length.
1009. BLOW-PIPE from Silhet, Bengal. Ornamented in red, yellow, and black lines, with mother-o'-pearl studs inlaid. 3 ft. 1 in. in length. The arrows with a hollow cone at base to fill the pipe and receive the air.

SCREEN 36.

SOUTH WALL.

MORNING STARS, FLAILS, HOLY-WATER
SPRINKLERS.

Tartar.

This weapon consists of a ball frequently armed with spikes, which is slung upon the end of a staff by means of a chain or thongs of leather. It appears to have been a weapon of Mongol origin, and to have been allied to the

whip which is usually carried by Tatar horsemen. Much light has yet to be thrown on these subjects by the study of Siberian antiquities and modern weapons, of which so little is now known. No. 1013, Fig. 114, is a Japanese morning star, having two spiked balls suspended to the handle by two chains. Hamel, in his travels in the Korea in 1653, says that the cavalry employ, amongst other weapons, whips armed with small iron points. It is frequently represented in the hands of huntsmen upon Chinese porcelain. Klemm gives an illustration of a Kalmuk flail, the handle of which is 1 ft. 1 in. in length, and has a broad thong, to the end of which an iron ball (No. 1012, Fig. 118, is one of these weapons from India), two inches in diameter, is attached. This is used chiefly by the Kalmuks in wolf hunting; it has developed into the whip used by the Chinese, Circassians, and Cossacks. No. 1015, Fig. 115, the knout, with 14 thongs of leather tipped with small brass-pointed knobs half an inch in diameter, attached to a brass staff, 3 ft. 7 in. in length, was the instrument used for punishment in the Turkish army, and is a vestige of the ancient Mongolian weapon. The Russian knout is somewhat differently constructed. The flail was also used as a war weapon in Russia and Germany. Nos. 1011 and 1012 are Indian weapons of this class introduced into that country doubtless from the north. Klemm gives an illustration of one of the 11th century consisting of a ball without spikes, attached to the staff by a chain, it is from the statue of one of the founders of Naumburg cathedral. They were used in Europe in the 14th century, and were introduced into England at the time of the Conquest, continuing in use until the 16th century. No. 1010, Fig. 116, is a European morning star of probably the 14th century. The cat-o'-nine-tails, lately abolished in the English army, may be regarded as a vestige of this weapon. The Roman *flagellum*, used in the punishment of slaves had two or three thongs knotted with bones on heavy indented circles of bronze, and terminating sometimes in hooks. It was also used as a weapon in the fights of gladiators, as appears by the representation of two gladiators thus armed upon a coin figured in Smith's Dictionary of Greek and Roman Antiquities. No. 1014, Fig. 117, is a small bronze flagellum with three chains, each terminating in a bronze ball. It is said to have been used by the Roman charioteers to encourage their horses by rattling it when they wanted them to quicken their pace, or, probably, it may have been attached to the horses themselves in the ecuria, a practice which is continued in Rome to the present time.

Flail.

Whether the military flail, consisting of a jointed bar attached to the end of a staff, such as is used by countrymen in thrashing at the present time, was derived from the use of agricultural implements in peasant warfare appears to be doubtful. It is probable that both had a common origin, and have since been applied to the distinct purposes for which they were adapted. There is reason to suppose that the use of this implement as a weapon of war dates from a period of remote antiquity, and that the bronze rings armed with spikes some of which may be seen amongst the antiquities of the bronze period were employed in this manner to arm the shafts of military flails during the bronze age.

SCREEN 36.

SOUTH WALL.

MORNING STARS, FLAILS, HOLY-WATER
SPRINKLERS.

- 1010, Fig. 116. MORNING STAR. European. Probably 14th century. With spiked ball, shaft 4 ft. 6 in. in length.
1011. MORNING STAR. India. With spiked ball, shaft 5 ft. 1 in. in length.
- 1012, Fig. 118. MORNING STAR. The handle of steel, 18 in. in length, with two chains terminating in a single plain iron ball. India.
- 1013, Fig. 114. Japanese MORNING STAR. Shaft 13½ in. in length, including a small iron fore-shaft, 4 in. long, armed with two iron chains, each terminating in a small spiked ball.
- 1014, Fig. 117. Small bronze model FLAGELLUM. Shaft 5 in. long, with three chains, each terminating in a bronze ball of pierced work. Said to be used by the Roman charioteers to rattle in encouraging their horses, or to be attached to the horses in the horse races.
- 1015, Fig. 115. Turkish KNOT. Shaft of brass, 2 ft. 2 in. in length, with 14 thongs of leather, 3 ft. 7 in. in length, each terminating in a small brass pointed knob, half an inch in diameter, used for the punishment of soldiers in the Turkish army.

SCREEN 36.

SOUTH WALL.

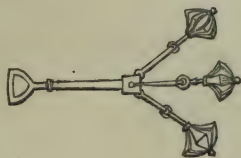
THE LASSO AND BOLAS.

Bolas.

South America.

Allied to the morning star, but differing from it in being thrown at the object of attack, is the *bolas* of South Ame-

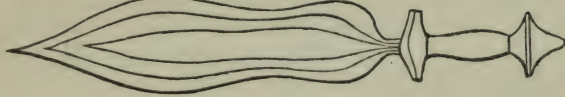
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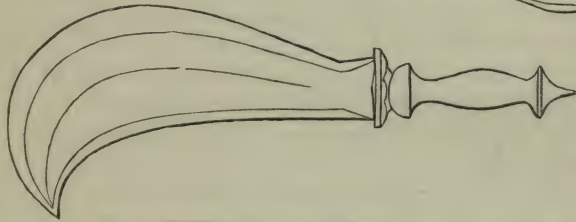
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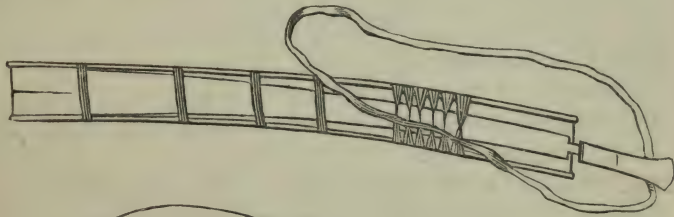
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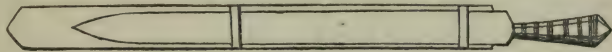
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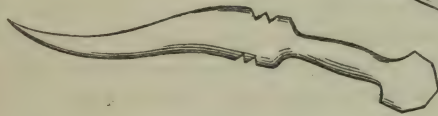
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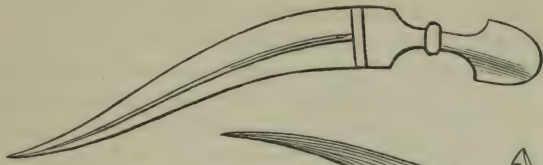
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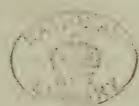
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PLATE XIII.



rica, Nos. 1016 and 1017. Ovalle, in 1745, describes the bolas used by the Pampas Indians for the purposes of war. It consists of two balls joined by a stout thong; one ball is of skin, about the size of an orange, and the other a bladder or constructed of some less weighty substance. The Indian takes the lighter ball in his hand, and after whirling the other over his head several times to give it the necessary momentum, hurls it like a sling at the head or legs of the enemy, and before he can extricate himself from the thong which is coiled round him, the thrower falls upon him and kills him. The Abipones call this weapon *roaharharancate*. It is of two kinds; the larger consisting of three stone balls covered with leather, two large and one smaller, the two large balls have each thongs $3\frac{1}{2}$ ft. in length, and the smaller a thong of $4\frac{1}{2}$ ft.; the three thongs are joined together at their ends. It can be thrown accurately at the distance of 100 paces. The smaller implement, called *bola perdida*, has a copper or leaden ball, much smaller than the others, and can be thrown as far as 150 paces. Consul Hutchinson says the *bola perdida* is used by the Chako Indians and also by the modern Peruvians. Captain Wallis, in 1766, describes the bolas used by the Patagonians on the river St. Croix; it consists of two stones enclosed in leather, each weighing about 1 lb., and joined by a strong cord 8 ft. in length. He says that they can hit a mark not bigger than a shilling at 15 paces, but they do not usually throw so as to hit the mark, but rather on one side, so that the cord winds round the legs of the animal. These stones are not always circular, but are sometimes egg-shaped, as may be seen by a specimen in one of the desk cases obtained by Lieutenant Musters from Patagonia. Mr. E. B. Tylor is of opinion that the bolas was in all probability invented in South America. In the desk cases may, however, be seen egg-shaped balls from North America nearly similar to the one from Patagonia, which may possibly have been used for the same purpose, and the traditional club of the Algonquins, before mentioned and spoken of by Schoolcraft, consisting of a stone ball at the end of a staff sewed up in leather, though not used with a thong, appears to be a somewhat analogous implement. The Esquimaux and Indians Esquimaux. of the North-west Coast of America use a small kind of bolas to catch birds, consisting of seven small ivory balls attached to the ends of strings of rein-deer sinew, which are used precisely in the same manner, and are mentioned by Captain Beechey and others, Nos. 1018, 1019. The lasso, Lasso. Nos. 1020 and 1021, is also used for war and the chase.

North and
South America.

Army of
Xerxes.

Scandinavia.

Ovalle, in 1649, speaks of the strong noose which the Indians of Chili throw upon horsemen. Tylor says it is used in the bull-fights in Mexico; it is used by the Moxos. Prescott says the Peruvians used it to throw over the Spanish horsemen at the siege of Cuzco in 1535, and Captain Beechey speaks of its use in California. It appears, however, not to be confined to the New World, for it was used in ancient times by a pastoral people who came of Persian descent, and of whom 8,000 accompanied the army of Xerxes. Mr. Campbell, also, in his *West Highland Fairy Tales*, says that the lasso, or a contrivance similar to it, is used by the Lapps at the present time to catch their rein-deer for milking. And it is also alluded to in the Norse fairy tales.

LASSO AND BOLAS.

- 1016. Patagonian BOLAS, with three balls covered with hide. South America.
- 1017. Patagonian BOLAS, with three balls. South America.
- 1018. Esquimaux BIRD SLINGS of reindeer sinew, with seven oblong knobs of ivory. North America.
- 1019. Esquimaux BIRD SLINGS, with seven oblong and spherical knobs of ivory. North America.
- 1020. LASSO, of leather. South America.
- 1021. LASSO, of leather. South America.

SCREEN 36.

SOUTH WALL.

HAND STONES AND SLINGS.

Apes.

Whatever doubt may exist as to which of the primitive weapons already described was earliest employed by man, the stone thrown from the hand can claim priority to the whole of them, for it is undoubtedly pre-human. Nothing is better authenticated than the fact of stones being thrown by apes for offensive purposes; as for example, in the account given by Hanno, of the gorillas defending themselves with stones, and which, in so far as the use of stones is concerned, is confirmed by Denham's account of the manner in which monkeys on the Yeou River defended themselves, by throwing stones from a height. Nor is it difficult to conjecture in what manner this experience has been acquired by them. I was once much struck with the

habits of a large and rather savage monkey, which was kept tied up in a tree in Scotland. Upon a stranger approaching the tree it would rush down with every demonstration of hostility, and throwing itself with all its weight upon a branch immediately over his head, shake it with great violence, at the same time screaming and showing its teeth at the aggressor. In order to explain this apparently harmless proceeding it is necessary to suppose the animal transferred to its original habitat gambolling amongst the leaves of the cocoa-nut palm, and other trees, bearing large heavy fruits, the fall of which from a height of 60 to 90 feet, would, no doubt, be found effective in driving off its pursuers. The force of gravity in this case would render the missile formidable, although launched with a comparatively feeble and ill-directed effort of the will on the part of the animal; and this accords with the description given by Denham, who on approaching these animals, found himself pelted "rather gently than otherwise," from the bank some 20 feet high, on which they had assembled. But by what process of the mind a monkey, transferred from its original home at an early age, grows up in a foreign land with the habits of defence acquired by the experience of its forefathers, though no longer effectual, by reason of the altered conditions of its surroundings, is one of those psychological problems connected with inheritance which are for the present unsolved.

If the hand stone was the earliest, and possibly the only weapon employed by the first progenitors of our species, it is not surprising they should, in the course of ages, have acquired extraordinary skill in the use of it, and that in the hands of modern savages it should be found to be a more formidable instrument of offence than is the case with civilized man, by whom the practice of stone throwing has been gradually superseded, by the introduction of more suitable appliances, requiring less skill and training to use them with effect.

The following account by Kolben, of the skill shown by Africa. the Hottentots in throwing the stone, and of the ape-like gestures with which the practice is associated, are worthy of being given in full. "The most surprising strokes of the Hottentot dexterity," he says, "are seen in their throwing of a stone. They hit a mark with a stone to a miracle of exactness, though the mark be a hundred paces distant and no bigger than a halfpenny. I have beheld them at this exercise with the highest pleasure and astonishment, and was never weary of the spectacle.

"I still expected, after repeated successes, that the stone would err, but I expected in vain. Still went the stone, right to the mark, and my pleasure and astonishment were redoubled. You would imagine that the stone was not destined to err, or that you were not destined to see it. But a Hottentot's unerring hand in this exercise is not the only wonder of the scene; you would be equally struck perhaps with the manner in which he takes his aim. He stands not still with a lift-up arm and a steady staring eye upon the mark, as we do, but is in constant motion, skipping from one side to another, suddenly stooping, suddenly rising, now bending on this side, now on that, his eyes, hands, and feet are in constant action; and you would think that he was playing the fool, and minding nothing less than his aim, when on a sudden, away goes the stone, with a fury, right to the heart of the mark, as if some invisible power had directed it. You are amazed, the Hottentot is delighted to see it, and will give you as many encores as you please." Not less remarkable are the accounts given of the performances of the Guanchees, of the Canary Isles, as they are described by Dr. Hodgkin, on the authority of Cadamosto and Galindo, and confirmed by Glas. In their single combats it was their custom to throw three stones in commencing the attack, which although thrown with great accuracy, were almost invariably evaded by the "agile writhing of their bodies;" and one instance is mentioned in which a Guanchee brought down with a single throw of a stone, a large palm branch at which he had aimed, and which, with its large strong leaves was capable of resisting the stroke of an axe. Stone throwing appears to have been the speciality of the Africans from time immemorial, as appears by a passage in Diodorus Siculus, B.C. 44, quoted in "Flint Chips," in which he says that the Libyans, "use neither swords, spears, nor other weapons, but only three darts and stones in certain leather budgets, wherewith they fight in pursuing and retreating, and with them they endeavour at the very first to hit their enemy." Stones are used for the defence of their strongholds by the Bassutos, by the inhabitants of Tahiti, the Sandwich Islands, and many others. Turner speaks of stones rounded like a cannon ball, which are used for throwing by the hand by the inhabitants of Savage Island and Eromanga. And Beechey, whose party was attacked by the Easter Islanders, says that they threw their stones with the hand with such force and accuracy, that several of the seamen

were knocked under the thwarts of the boat. In Tanna the Kawas described by Turner, consists of a stone the length of an ordinary counting-house ruler only twice the thickness, which they throw with great precision for a distance of twenty yards. Commodore Byron also speaks of the stones thrown by the Disappointment Islanders for their defence. Crantz says that the young Esquimaux as soon as they are able to make use of their hands, are instructed by their parents in stone-throwing at a mark. Amongst the Indians of Demerara, Sir R. Schomburgh describes a very singular custom. When a child passes from infancy to boyhood, he is given a round stone, which he has to keep in his hands rubbing until it becomes smooth and round; this he is years in doing, and he becomes a man before the task is achieved. It is difficult to account for the origin of so singular a custom, unless it has been instituted as a lesson in perseverance, which quality in the opinion of many people, is best inculcated by engaging the minds of youths in matters that are devoid of any other incentive to labour, in the way of practical utility or interest. The custom may, therefore, be compared to that of teaching Latin and Greek to the children in our schools, a practice warmly supported on these grounds, and by some of those who are charged with the education of youths and children at the present time.

We have already seen, that in order to accelerate the flight of the javelin two methods have been adopted in different countries, one by means of a throwing-stick, and the other by employing a thong or cord called an Amentum, attached to the centre of the javelin. These two contrivances have likewise been adopted to increase the range and force of the stone. The stick sling consists of a stick, in the upper part of which is a slit or hole, in which the stone is put; this kind of sling appears to have been used in Egypt, as is seen by an illustration in Lepsius's work on Egypt, quoted by Nilsson, in which a man is represented throwing a stone with a stick sling, and who has a heap of stones at his feet. It is not unlikely that the split Dowak, No. 401, already described, may be a stick sling of this kind, and that the oval piece of wood in the slit may be a contrivance for opening the cleft and releasing the stone at the proper moment; but I have no authority for saying that such an instrument, or indeed a sling of any kind is used in Australia, although it would be reasonable to expect that a stick sling would be found in a country in which the Wamera is used. The ribbon

Esquimaux.

Stick sling.

Ribbon sling.

sling consists of a string or thong about 3 ft. long, one end of which is twisted round the finger and the other held between the finger and thumb. It has a broad part in the middle to contain the stone, which is hung in the loop formed by the bend of the sling; it is whirled once or twice round the head to give it the necessary velocity, and then hurled at the object by releasing one of the thongs. To these, Mr. E. T. Stevens, in a note in "Flint Chips," adds another kind, consisting of a stick with a strap attached to one end. A sling stone of disc shape is placed

Stick sling.

under the strap, between it and the stick at the end where they are attached to each other; the strap is pulled down tightly so as to retain the stone in its proper position and grasped in the hand with the butt-end of the stick. The stone is then thrown like that used with the stick sling, releasing the strap at the proper moment. A staff-sling intermediate between this and the ribbon sling, of the beginning of the 15th century, is figured in Demmin's History of Arms, it consisted of a stick with a thong at the end of it, like the lash of a whip, about twice the length of the stick; the broad part to contain the stone was half way between the butt-end of the stick and the end of the lash; both ends being held in the hand, the sling was used like a ribbon sling, and the end of the lash released at the proper moment. A fourth kind, called *Fustibale* in French, from *fustis* a stick, and *βαλλω* to throw, also figured by Demmin, consisted of a shaft about a yard long, at the end of which was a small leather sling, the near end of which was fixed to the shaft, and the further end slipped on to the shaft by a ring, the stone being placed in the loop of the sling, and hurled over the head, the ring slipped off the end of the staff of its own accord, when the staff approaches within a certain angle of the line of projection and released the stone. This appears to have been used in Europe in the 12th century, and to have continued in use for throwing hand-grenades until the 16th century.

Nations of antiquity.

The sling does not appear to have been used by the Greeks in the earliest times; it is not mentioned by Homer, but in the time of the Persian wars it had come into use, for amongst other troops which Gelon offered to send to the assistance of the Greeks against Xerxes, Herodotus mentions 2,000 slingers (Smith's Dictionary). Amongst the Greeks the Acarnanians in early times obtained the greatest expertness in the use of this weapon, and the natives of the Balearic Isles who derived their name from their performances in the use of missile weapons, used to teach

their children by placing their food upon a pole, and obliging them to bring it down with their slings. The Balearians usually made their slings of rushes of different sizes, adapted to different distances, and such was their power that Metellus, on approaching the Balearic Isles, ordered his ships to be covered with skins, in order to break the force of the stones thrown from them. But the Achæans were even more formidable in the use of the sling, and could strike any part of the face of an enemy that they aimed at. They used both stones and leaden bullets of the weight of an Attic pound, or 100 drachms. Livy says, that the Achæan slings were not like those of the Balearic Isles, consisting merely of a single strap; but the thongs of their slings were threefold and made firm by several seams, that the bullet might not by the yielding of the strap in the act of throwing, be let fly at random, but after sticking fast whilst whirling it about, it might be discharged as from the string of a bow; they were accustomed to practise at circular marks of small circumference (Livy, translated by W. A. M. Devitte, Book xxxviii., ch. 28). The skill of the Jews is recorded not only in the account of David and Goliath, the former of whom is believed to have used a stick sling, from the word *staves* being used in the text (Nilsson), but also in the xx. Judges, where it is stated that among the children of Benjamin, there were 700 chosen men left-handed, every one of whom could sling stones at a hair's breadth, and not miss. Mr. Rawlinson describes the Assyrian slings as being constructed of two pieces of rope with a short leather strap to receive the stone. Sennacherib was the first to institute a corps of slingers, who, at any rate, first appear in the sculptures during his time, and as the sling was known to the Egyptians, it is probable, he thinks, that his acquaintance with Egypt may have led to the adoption of it from that country. It is noticeable that in the Assyrian sculptures the slingers first appear fully equipped with coat of mail, tunic, and greaves, whereas in most other countries of antiquity they were lightly clad.

Turning now to the consideration of the use of the sling by modern savages, it is rather remarkable that notwithstanding the fact of the sling having been commonly employed in ancient Egypt, and the great skill exhibited by the African savages in throwing stones by the hand, I Africa. cannot find amongst my notes any mention of the use of the sling by negroes, except amongst the Edeeyahs of the island of Fernando Po, on the east coast, who are said to

India.

Java.

Polynesia.

Scandinavia.

be very expert with it in killing squirrels and small birds. A sling, of which No. 1026 is a specimen, is used in southern India, and also in Afghanistan, in which country a native Kookhee told John Campbell, a traveller, whose work, entitled, "Lost amongst the Afghans," was published some years ago, that he had killed two English officers with his sling during the retreat from Cabul. Dampier says that it is used in Java, but without much effect, and in an attack upon the palace of the Sultan in 1812, the Javanese threw stones from slings in great numbers, without inflicting a serious wound, or even dangerous contusions, in the period of two days. In Australia, unless the weapon already described is a stick sling, I am not aware that slings are anywhere used.

It is used in Tanna, New Hebrides, where it is suspended from the armlet when not in use; in New Zealand, No. 1022, and in New Caledonia, where the stones are artificially formed of soap-stone and other stones, and carried in net purses attached to a fillet round the head, No. 1027. It is remarkable that the pointed oval form of these stones, and which according to Nilsson are also found in New Zealand, exactly resemble those from the Scandinavian peninsula, as well as the small leaden bullets used by the Greeks, some of which may be seen in the desk cases. This form appears to have been independently adopted in these different countries, and arose not from its being of a shape that is well adapted for flight in the air, but on account of its fitting accurately in the loop of the sling, and enabling it to be held firmly without shifting, whilst whirling it over the head; for the same reason the New Caledonians wet them in the mouth before putting them into the sling. The sling was found in use at Oparo, one of the Austral Isles, by Vancouver in 1791. It is used in Fiji and in Sandwich Islands, where it is made of human hair plaited, or the elastic fibres of the cocoa-nut, and is used with water-worn pebbles, about the size of a hen's egg. Ellis says they can strike a stick with it at 50 paces four times out of five, and they are very clever in avoiding the stones. Tahiti is, however, the island in which they most excel in the use of the sling, which unlike the bow and arrow, is used for war, and they practise with it for accuracy, and not for range as with the bow. Their practice like that of the Sandwich Islanders, is at a stick fixed in the ground, and the children use the fruit of the Mono to throw at the mark. The stone is called *Uriti* when it is a smooth water-worn pebble about the size of a hen's

egg, but when an angular stone is used it is called *Ofairava*; the sling *Ma* is made of the finely-braided fibres of the cocoa-nut or filaments of the native flax. It has a loop for the finger at one end and a wide receptacle for the bullet in the centre. It is held in the right hand, and when armed with its stone, is usually carried slung over the right shoulder on the left side. When it is to be thrown, it is first stretched across the back, and then whirled over the head, after which it is discharged with great force. Ovalle mentions the use of the sling in Chili, in 1649, and South America. E. B. Tylor says that in Mexico the *Honda* or sling of aloe Mexico. fibre is used with such skill by the goatherds, that in driving their flocks they can hit a goat on whichever horn they please. According to Stevens, it was used by the defenders of Copan in 1530, and it has been found in the Guacas or ancient graves opened at Arica, in Peru (Schoolcraft), where Peru. it was of the usual form already frequently described, consisting of a thong with a broad piece in the centre to contain the stone, and was associated with a copper axe, and other primitive objects. No. 1027A is a Peruvian sling from a grave at Pacha-Camac, Peru. It is used in Tierra del Fuego, No. 1023, and amongst the Esquimaux; it is used in Labrador, Hudson's Straits, the Great Fish river, North America. and Frobisher's Straits. The forms of sling stones used in pre-historic times, will be considered when describing the pre-historic series.

SCREEN 36. SOUTH WALL.

SLINGS, &c.

- 1022. New Zealand, SLING of matted grass.
- 1023. SLING, with leathern piece in the centre to contain the stone. Tierra del Fuego.
- 1024. SLING.
- 1025. SLING.
- 1026. SLING. India.
- 1027. FILLET to wear on the head, with two net purses attached containing 17 pointed oval sling stones. New Caledonia.
- 1027A. SLING from graves at Pacha-Camac, Peru. Obtained by Consul Hutchinson in 1873.
- 1028, 1029. Samoan FLY-FLAPPERS.
- 1030. WHISK. W. Africa. Obtained by Sir H. Denham.

SCREEN 37.

KNIVES, DAGGERS, AND SWORDS.

Wooden
swords.

Wooden swords are often mentioned by travellers, as for instance, by Capt. Owen Stanley in New Guinea. A sword of heavy black wood is used in the Sandwich Islands. In Virginia, Capt. John Smith speaks of a wooden sword used by the Indians, and Consul Hutchinson describes a wooden sword used by the Itonamas, a tribe of the Moxos in South America. Nos. 463 and 464 are large wooden sword-shaped clubs from Eastern Australia and are described by Mr. Oldfield. No. 459 is a wooden sword from New Zealand, probably from its shape a copy of a sword of European manufacture. These wooden swords ought, however, to be classified as flat clubs, for although sharp at the edge and used as swords, they can in no way be regarded as the progenitors of the metal swords of a more advanced stage of culture.

Early metal
swords.

In all countries metal on its first introduction appears to have been extremely scarce, and it would therefore have been quite impossible to have imitated these large wooden clubs either in bronze or iron. Amongst most nations the first attempts in the metallurgic art appear to have produced nothing more than a small triangular piece of metal, the broad end of which became the edge of an axe, and the pointed end, as the process of smelting improved, grew gradually into the knife or dagger, and ultimately into the sword. It is not my intention to speak of the weapons of the bronze period at present. Suffice to say that in the weapons of the earliest bronze age, which are associated with implements of stone, nothing but knife-daggers of the simplest form have been as yet discovered in England, although this does not perhaps hold good to the same extent in Scandinavia, where the earliest bronze weapons are of a more advanced type.

Following the course already adopted in the case of other weapons, I propose to consider here only the development of metal knives, daggers and swords as seen in weapons of this kind in use at the present time, and hereafter I will endeavour to apply these observations to the implements of the bronze age. In the weapons of the early bronze age there does not appear to be that close connexion of form between the spear-head and the knife that is seen in the iron weapons of Africa, and the reason for this may possibly be, that bronze being a mixed metal was more valuable and

was not used generally for arrow and spear points, which continued to be made of flint. Bronze arrow heads are extremely rare in Europe, and the bronze spear-heads are of a form which shows that they belonged to an advanced stage of the manufacture; but in Africa, iron being, as already observed, extremely common and easily worked, it was used for all kinds of weapons, and the same forms were, as already noticed, used for a variety of different purposes. The Kaffirs use the heads of their assegais as knives in carving and for other purposes; and Grant says that the Watusi of East Africa make their baskets with their sharpened spear-heads. Referring to Nos. 1088 and 1089, Fig. 119, from the Gaboon, East Africa, it will be seen that they are nothing more than leaf-shaped spear-heads of the ordinary form stuck into handles to be used as knives, and on running the eye from these along the top row of African weapons from left to right, it will be seen how these knives, simply by enlarging and modifying the form of blades, grew into the leaf-shaped sword of that district. Of these swords the smaller kind, according to Du Chaillu, were used for thrusting, and the larger for cutting. No. 1093, Fig. 120, with its excised portions on the sides corresponds to the form of some of the bronze blades of spear-heads found at Marin in the lake of Neuchâtel in Switzerland (Keller, *Lake Dwellings*, translated by J. E. Lee, p. 249), respecting the uses of which much speculative ingenuity has been expended. If travellers could be persuaded to pay half as much attention to the detailed form of objects that are found in the hands of modern savages, as is devoted to implements that are dredged up from the bottoms of lakes, they would throw much light on the psychology of primeval man, and afford an easy explanation of many details which cannot be otherwise understood. In Liberia, No. 1105, Fig. 121, we find this leaf-shaped sword curved in accordance with the almost invariable law of variation already alluded to. This leads to various kinds of choppers of which analogous forms are exhibited from India, Nos. 1107 and 1109. Nos. 1100 to 1104 are chopper knives from Dahomy, the uses of which are described by Burton. No. 1101 is a similar form with a blade of brass which is used as a state weapon. Nos. 1123 to 1125 are straight-pointed daggers, to the sheaths of which are attached leathern bands or collars which fit on to the arm, so that the dagger is worn on the left arm with the hilt downwards. This mode of carrying the dagger properly belongs to the Tawarecks, but Barth says it has been introduced into a great part of Negro Africa.

land, and it is also the custom in Nubia. The probable origin of this custom may be sought in the account given by Grant of the knife used by the women of Faloro in lat. $3^{\circ} 15' N.$, which is carried by being stuck into the iron rings worn on the naked arm above the elbow. In other parts of Africa it is stuck into the rings upon the legs.

The use of the sword in the Mahomedan parts of Africa depends in a great measure upon the wealth of the people. Some, like the Farawy mentioned by Barth, trust entirely to their swords; others, as amongst some of the Bagirmi, cannot afford to buy swords, and are unable to make them themselves. Here in Africa, as amongst the Anglo-Saxons wearing the sword, is considered to be the mark of a free man; and the Imgad, a degraded race of Berbers, are not allowed to use either the sword or the spear. It is generally worn on the left side, but the Abyssinians carry their *Shotel*, No. 1245, like the Romans on the right, in order that it may be readily drawn without disturbing the shield on the left arm. They also carry it, or used to do, slung horizontally like the ancient Assyrians (Parkyns).

Asiatic islands.

The Asiatic islands afford an example of another centre in which the use of the sword appears to have been introduced independently. The short krises and other sword-like weapons of the Dyaks of Borneo, Nos. 1186 to 1194, present all the characteristics of indigenous art, no two being exactly alike, and yet varying only within narrow limits. There are superstitious usages connected with the fabrication of them, and some of them are made only at particular times and places, requiring in some cases as many as eight or ten years to complete them, waiting for supposed favourable opportunities, and the wearers of them are held to be invulnerable. Barbosa, in 1514, speaks of this, and mentions the swords with broad ends made by the Bugis of Celebes, probably resembling Nos. 1066 to 1069. The Bugis are still considered to be the best workers of krises. In Java iron used formerly to be very scarce and the implements of agriculture were only tipped with iron. Crawford says that the sword was not introduced into Java until 1580, and the spear rather than the sword is still the favourite weapon of horsemen. Swords of a peculiar curved back form with a concave edge, closely resembling those of bronze found in the Swiss lakes and elsewhere amongst implements of the bronze period of Europe and resembling also some seen in the Egyptian sculptures, are represented in the sculptures of the ancient ruins in Java; but these

ruins are purely exotic and probably of Hindoo construction. One characteristic of an aboriginal weapon, that of being used for a variety of purposes, appertains to some of the Malay swords; the *Parang-Ihlang* and *Parang-Latoc* of the Asiatic islands, the latter of which is represented by No. 1195, is used both as a tool and weapon for a great variety of purposes, and the peculiar angle of the blade and handle renders it a formidable weapon for cutting off heads. There is a general connexion in the form of weapons over the whole region extending from Borneo up the Malay peninsula, where the *Parang* is used, into Burmah, Assam, and Nepal; and throughout this region the sword is the ordinary tool and weapon of the peasantry being carried by them invariably, and used for all ordinary purposes whether of war, agriculture or handicraft. Nos. 1157 to 1159, Fig. 122, are Assamese swords or knives used by the Mishmees; the sheath consists of a single piece of wood and is on one side only. No. 1160, Fig. 123, is the *Ban* of the Lepchas near Darjeeling, between Bootan and Nepal, which was described and presented to me by Dr. Campbell; like the Assam weapon it has a sheath on one side only, and is used as the tool and weapon of all work by the Lepchas. The *Dah* of Burmah, Nos. 1082 to 1086, is used by the Yangs and Kariens for general purposes. It is a single-edged sabre with a long handle, and it has the peculiarity of having the handle curved in continuation of the line of the blade, a peculiarity which is not seen in the swords of any other people but the Japanese, of which No. 1087 is a diminutive example. The Japanese officers have three swords of this kind, of which two are carried at the same time, like the Moors of the Deckan mentioned by Barbosa in 1514, who had also the same custom of riding tied to their horses. The latter practice, whatever may be thought of the former, may no doubt be regarded as an example of results produced by like causes, and may be explained by the pathetic account of his performances vulgarly attributed to a distinguished foreigner on his first appearance in the hunting field, "When he go easy that very well, but when my horse jump hard I do not remain." The third sword carried by the Japanese officer is of superior workmanship, and is handed down from father to son, to be used on State occasions. Neither the common soldier nor a degraded officer is allowed to carry two swords. It is said that a Japanese sword has been known to cut a man completely in two from the shoulder to the legs; and similar accounts have been given of sword cuts in India, but for these I am not re-

China.

sponsible. The Chinese sword is usually straight, short, and double edged, like those of the Roman soldier, or triangular and pointed; and of these two are frequently carried in one sheath, Nos. 1171 to 1183. The straight short sword appears to be the weapon of the Tartar race. Herodotus said that

Indian swords.

the Massagetæ used swords. A systematic study of Indian weapons would afford an almost untouched field of inquiry to any one who might possess the necessary opportunities and qualifications for dealing with the subject. Their forms are very various, and may undoubtedly be traced to certain root forms. In order to do this it would be necessary to obtain accurate information as to the present distribution of every variety known under the appellation of *Bichwar*, *Pushkubz*, *Kyjar*, *Chellanum*, *Khunjar*, *Tulwar*, *Shumshere*, *Furrung*, *Mahomood*, *Sulawar*, *Kookree*, *Khora*, and others. It is to be hoped the subject of Indian weapons may before long be scientifically treated by some competent inquirer. The study of the names of weapons alone affords a promising field of investigation. Care must, however, be taken not to assume that the distribution of names and forms are identical; for there can be no doubt that the names have changed their significance in different districts, and become applicable to different weapons. The names of weapons in savage life are totally unreliable, and in semi-barbarous countries must be received with caution, the necessity for which may be judged of by the fact mentioned by Mr. Farrar in his "Origin of Language," that in Arabic there are no less than 1,000 names for a sword.

Knife dagger.

In Europe the development of the sword has been gradual and continuous from the earliest periods of which the relics afford us any information. It would be impossible here to enter into the detailed examination of the numerous varieties to which this weapon has given rise, some of which will be described more closely when treating of implements of the bronze age; but throughout the entire history of the sword one main line of development may be traced. Commencing with the small triangular bronze knife-daggers already spoken of, these appear gradually to have increased in length and to have grown into the long slender rapier blade, expanding suddenly near the handle; the centre part of the blade then expanded into a pointed leaf-shaped form resembling the leaf of the yucca, or Adam's needle, narrowing towards the handle, and expanding again near the hilt; examples corresponding to which are found in the weapons of Africa, Burmah, and the Asiatic isles. This is the most characteristic weapon of the bronze age, but in the transi-

Leaf-shaped
swords.

tion from bronze to iron the point gradually widened and grew into the long straight iron pointless sword of the late Celtic period, with which the Gauls and others were armed when they came in contact with the Romans, which is spoken of by Livy, Tacitus, and Polybius, and of which specimens have been discovered near Berne, and described by Baron Bonstetten. The transition to this from the pointed leaf shape may be seen in specimens from the graves at Hallstatt. To this long straight double-edged sword there grew, in the hands of the Franks and Saxons, a cross-bar or guard, which was at first curved towards the blade, and represented only an expansion of the lower part of the handle, but ultimately it became straight, and in this form, increasing gradually in length, it continued to be used with the straight double-edged blade from the 9th to the 16th century.

Long straight sword.

Towards the close of the 15th century this main line threw out a gigantic excrescence in the shape of the two-handed sword, of which No. 976 is an example. This, although it appears to us a somewhat unwieldy weapon, was well spoken of by the people who used it, and continued to be employed until the close of the 16th century. This brings us up to the specimens represented on the screen. No. 1031 is a broad variety of this class of sword, of the 15th century, known by the name of *Anelace* or *Langue de Bœuf*, from its supposed resemblance to a bull's tongue. Nos. 1032 to 1034 are swords of the normal type, of the end of the 15th or beginning of the 16th centuries, of the form which had been in use for so many centuries before. During the 16th century there were added to the straight cross-bar several minor additions called *quillons* and *pas d'ane* represented in Nos. 1035 and 1036. The blade also became much narrowed and lighter, and instead of the double-edged blade, which had been in use up to this time, with rare exceptions, the single-edged rapier began to be introduced, and this continued to be employed during the 17th century, when the *quillons* were replaced by a guard covering the back of the hand, in which form it continued to be employed during the 18th century, as seen in Nos. 1043 to 1048; and in a much reduced form it is employed as a Court sword to the present day. But there is another branch of the straight double-edged sword which, leading us again into Northern Africa, deserves to be described. From the travels of Denham and Clapperton we learn that the knights of Malta, by whom this class of sword was used, the blade of which, with a modern handle attached, is seen in No. 1042,

Mediæval.

Africa.

exported great numbers of them to Bengazee, in the state of Tripoli, where they were exchanged for bullocks. From Bengazee, they were carried across the desert to Bornou, and from thence to Haussa, and were ultimately remounted at Kano, for the use of the greater part of the Mahomedan portion of Africa. Nos. 1073 and 1074 are straight swords of this class from Northern Africa, of the form of the straight ones of mediæval Europe. Barth says that this trade still continues at Kano, at which place European blades to the amount of 50,000 per annum were obtained from Solingen, and from thence supplied to the Tawaricks, Fulbe, Kelowi, Tari, Hausa, Nyffawa, Kanuri, and Bornouese. European blades are also exported into the Mandingo country and remounted and sheathed there, Nos. 1071 and 1072. So that in dealing with the forms of Central African weapons it is necessary to distinguish the native from the European forms.

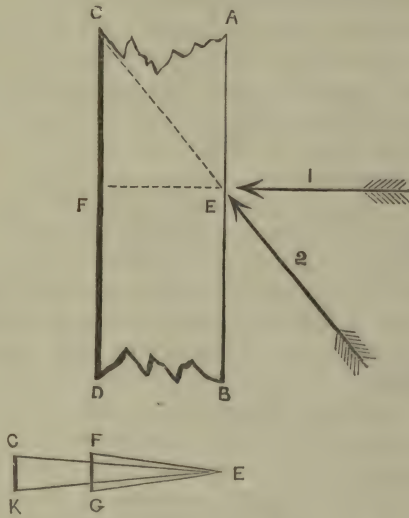
The long straight double-edged sword of the Franks and Saxons was, I believe, a development of the sword of bronze. Judging by its scarcity in the graves of both, it was probably the distinctive weapon of the superior ranks, but the "*seramasax*," a short sword, or rather long knife, shaped somewhat like the blade of a clasp-knife without the handle, and having one or two long grooves on the sides near the back, appears to have been purely of Teutonic origin. It is a development of the small knife of nearly the same shape, carried by nearly every individual of that period, and very probably may have been derived from the East. The *sabre* and *cutlass* also, which is the straight sword, curved and single-edged, though not unknown to the Franks as appears from a specimen figured by Baron Bonstetten found with some Teutonic umbos of shields at Pettit Huningen, near Bale, and another in a Helveto-Burgonde tomb near Yverdun, and one from graves at Osengal, in the Isle of Thanet, described by Wright, was extremely rare in Europe, and when introduced at a later period, was very probably derived from Asia. This is the form most commonly employed in India, Nos. 1049 to 1051, and by the Turks, No. 1060, and has already been alluded to in several parts of Asia. The advantage of the sabre as a cutting weapon arises from its presenting the edge of the sword obliquely to the object to be cut through, and thereby increasing its penetrating power. The cutting power of any blade will be proportioned to its sharpness, in other words, to the acuteness of the angle formed by the two sides of its cutting edge, but the degree of sharpness that

Scramasax.

Yverdun.

Sabre.

can be given to a blade is limited by the substance necessary to penetrate hard bones.



Let A, B, C, D, represent a fragment of a sword blade, of which A, B, is the edge and C, D, the back, about $\frac{1}{4}$ th of an inch thick. Now if the object to be cut through is presented to the blade at right angles to the edge, as shown by the arrow No. 1, then the section of the blade with which the cut is to be effected will be as represented in the triangular section F, E, G, but if the object is presented to the blade obliquely, as shown by the arrow No. 2, then the section along the line of the cut will be as represented by the angle C, E, K; by which it will be seen that the acuteness of the angle at E is greatly increased, whilst the substance is the same as in the other case. To effect this, it is the custom in many parts of the East to strike with a drawing cut, but the same purpose is secured by bending the blade backwards, by which the edge is presented obliquely to the object without entailing the necessity of imparting a drawing motion to the stroke. For the foregoing explanation of the properties of the sabre I was indebted many years ago to Mr. Latham, of Wilkinson's, Pall Mall. Here, I may observe, that in order to give an effectual drawing motion to the stroke, it is necessary that the hand should fit the handle tightly, both above and below, so that in grasping it there should be a pressure both on

Small handles.

the pommel and guard, and this is the reason why the handles of Oriental swords are usually much smaller than our own. The bronze swords found in Europe have also small handles, and this circumstance has been used as an argument by some anthropologists who seem to be under the necessity of seeing in everything an indication of racial differences, for supposing that they belonged to a small race of men. No doubt some few of the handles, both of Oriental and bronze swords are smaller than could be conveniently used by a European hand, but as a rule neither the one nor the other have handles too small to be held by an average European if grasped as they grasp them, and used with a drawing movement, as the form of the leaf-shaped sword appears to indicate that they undoubtedly were. In fact the handles of European swords are invariably too big for us, this, according to Klemm, was not always the case. The long handles were introduced into Europe in the 13th century, and have continued ever since, but the custom has never been adopted by the Brahmins or Mahometans, nor was it adopted by the Greek, Italian, Scandinavian, or German races of pre-historic times. The Scotch basket-hilted single-edged sword, No. 1038, appears to have been introduced from Venice in the 17th century. No. 1039 is a cutlass with the same kind of hilt, which I obtained from Malta, and which was used in the Maltese galleys. Nos. 1037, 1040, and 1041 are of the same form. The sabre, No. 1052, has been introduced from India, and is used by general officers in England at the present time.

Much light will doubtless be thrown on the origin of iron and steel weapons by the study of those used in the East, and especially of the pre-historic implements which are beginning to be discovered there. For that study I have neither the materials nor opportunities, nor the linguistic qualifications which would be necessary to prosecute such an enquiry with effect. I have, however, arranged upon the last screen several groups of Oriental weapons in the order in which it appears to me they should be classified with a view to trace them to their root forms. The first of these, Nos. 1197 to 1202, Fig. 124, shows the development of the form called *Kyjar*, which derives the shape of the blade from the natural bend of a cow's horn, of which material the first of the series, No. 1197, is constructed. The succeeding specimens show how this form has been copied in ivory and steel, and how the handle has gradually become modified, whilst the form of the blade has been retained, Nos. 1199 and 1201, Figs. 125 and 126. Nos. 1203 to 1207, Fig. 127,

show the successive modifications of another variety called *Bichwar*, in which the blade has a similar origin, and the handle is derived from an aperture cut in the ox horn for the hand, and which has been subsequently copied in metal. No. 1208 is a dagger, having a similar handle to this, from Western Africa. Nos. 1209 to 1221 show the development of a peculiar form of dagger with a cross handle, called *Kuttar*; the actual origin of which is unknown to me, but which I am informed is used generally by Mahomedans in India. Its apparently most primitive form is seen in the specimen, No. 1209, Fig. 128, where the blade is a nearly equilateral triangle. The blade gradually increases in length until it reaches the size attained in Nos. 1219 and 1220, Fig. 129, when it assumes the name, according to my informant, of *Bara-Jumdadoo*; and the cross-handle is covered with a kind of rudimentary hand-guard. In the next specimen, No. 1221, Fig. 130, called *Puttah* or the gauntlet sword, the blade is considerably lengthened and narrowed, and the guard entirely covers the hand and fore-arm, the extension and lightening of the blade in this series corresponds, it will be seen, to what is known to have taken place in the development of European sword-blades.

The next series, Nos. 1226 to 1232, is taken from Modern Europe, and illustrates the history of the European bayonet. In the early part of the 17th century, it was found necessary to retain the use of pikemen in the infantry on account of the defenceless position of the fire-lock men when the enemy approached to close quarters. To remedy this defect they were accustomed, about the middle of the century, to stick the handles of their daggers into the muzzles of their guns in order to use them as pikes. Nos. 1226 to 1230 are the implements modified upon this principle, and called *plug bayonets*, one of which has the date 1647 upon it. The objection to this arrangement was that the handles stopped up the muzzle, and the gun could never be fired with the bayonet fixed. Many of the dagger handles had rings on the guard, and this suggested the idea of fastening the ring on to the muzzle, and the dagger or *plug bayonet* is then secured by a spring on the outside, so that the fire-lock could be loaded and fired with fixed bayonets. Our first introduction to this weapon was in one of the campaigns in Flanders, in the time of William III., and is thus described by Grose, "in one of the engagements there were three regiments, whose bayonets were made to fix after this fashion, a contrivance then unknown to the British army; one of them advanced against the 25th regiment with fixed bayonets."

" Lieut.-Colonel Maxwell who commanded it, ordered his
 " men to fix their bayonets into their muzzles to receive
 " them; thinking they meant to decide the affair point
 " to point, but to his great surprize, when they came within
 " a proper distance, the French threw in a heavy fire,
 " which for a moment staggered his people, who by no
 " means expected such a greeting, not conceiving it possible
 " they could fire with fixed bayonets; they, nevertheless
 " recovered themselves, and drove the enemy out of the
 " line."

Kopis.

Perhaps one of the most interesting groups in the collection is that which represents the distribution and varieties of the form of weapon known as the Greek *Kopis*. No. 1233, Fig. 131, is this ancient weapon. It was found with some others in a tomb, said to be Roman, between Madrid and Toledo; together with iron daggers, an iron spear-head, and part of the shaft of a Roman pilum, which are in the desk cases in this collection. With the exception of one other, from the same find, now in the British Museum, this is, I believe, the only weapon of this kind that has come to this country. Its identity with the Greek *kopis* may be judged of by comparing it with the copy of a painting on a Greek vase in the British Museum, representing a battle between the gods and giants, No. 1234, Fig. 132, in which one of the latter having fallen upon his knee, has raised the *kopis* in defending himself. Every part of the sword in the hand of the giant, even to the curve of the pomel, the projection of the guard, and the grooves on the blade, is identical with the weapon here exhibited. Copies of other paintings upon vases, No. 1235, from a vase in the British Museum, representing a fight between Hercules and the Amazons, in which the latter are armed with the *kopis*; and Nos. 1236 and 1237, from vases in the museum at Naples, are shown in order to identify this weapon. According to Meyrick the *kopis* was used by the Argives in Greece, and the following remarks by Senior Soromenho, of the Academie des Sciences at Lisbon, are quoted with his permission and prove the Oriental origin of this form of sword. "Xenophon," he says, "speaks of the *kopis* as being used by the Persians "and barbarians," and Quintus Curtius says that it was employed by the Persians in the chase, "*Copidas vocant gladios leviter curvatos falcibus similes*;" and Polybius gives the Persians the priority in the use of it over the Greeks. Senior Soromenho, than whom there can be no better authority on the antiquities of the Iberian peninsula, expresses

himself confident that the weapon is not Etruscan, no remains of that people having been found in Spain, and believes that it must be assigned either to a Greek or an Arab origin. If, he says, "it was originally of Oriental origin, why should it not have come into this country through the Arabs?" The very close resemblance in points of detail to the weapon on the Greek vases appears, however, to leave little room for doubt that this question must be decided in favour of a Greek origin; and if so, the most plausible explanation of its presence in Spain appears to me to be that it must have been brought there direct by the Roman legions who were fighting about the same time in both countries. Its form is obviously derived from that of the straight leaf-shaped bronze sword, of which it is simply a curved variety. Both the straight and the curved weapon are represented on the same vases, the former being the one most commonly employed. Referring to No. 1238, Fig. 133, the *kookrie* of the Goorkahs of Nepal, it will be seen that this is unmistakeably the same weapon; it is a formidable instrument of offence in the hands of these people, who used it with great effect during the Indian Mutiny. This form of blade is also used in other parts of India, some of them being of great antiquity. No. 1239 is an Indian blade of this kind with a European handle attached. The Turkish Albanian, and Persian *yataghans*, Nos. 1241 to 1243, Fig. 134, are also the lineal descendants of this ancient weapon, the width of the blade having been reduced in order to lighten it. Sir Henry Rawlinson, in a lecture delivered at the Royal United Service Institution in 1857, says of the Persian swords, that "they are chiefly made in Kurdistan; their temper is marvellous, but they are only of use for a peculiar mode of *drawing*." They are of no use as cavalry swords or for a sheer cut; they can be made as sharp as razors, and a blade has been sold for 100*l*. No. 1244, Fig. 135, is the Kabyle *flissa*; it is the same form, but the back is straightened exactly like the Greek specimen represented on the Neapolitan vase, No. 1237, and it has in all probability been brought by the Arabs from the East. It will thus be seen that the distribution of this class of blade is continuous, extending from India into Northern Africa and Spain, and having been originally a variety of the bronze leaf-shaped sword; it has survived continuously with but slight modification for upwards of 2,000 years.

SCREEN 37.

KNIVES, DAGGERS, AND SWORDS.

1031. ANELACE or LANGUE DE BŒUF. European. 15th century.
- 1032 to 1034. Long broad double-edged SWORDS, with straight guards. End of 15th or beginning of 16th century.
1035. SWORD. European. 17th century. With *quillons* and *pas d'ane*. Straight, double-edged. Length of blade, 3 feet.
1036. SWORD. European. 17th century. Blade 2 ft. 10 in. Double-edged, straight.
1037. SWORD. English. Straight. Single-edged, with basket handle. 17th century.
1038. SWORD. Scotch, with basket hilt. Single-edged. 17th century.
1039. SWORD. Maltese. Used in the Maltese galleys. With basket hilt. Single-edged, straight. 17th century.
1040. SWORD. Norwegian. Straight, double-edged. With shell-shaped shield, said to have been found with the axe, No. 896, on the field of Kringelen, in Norway. 17th century.
1041. SWORD, with basket hilt. 17th or 18th century.
1042. Maltese knight's sword. Straight, double-edged, with modern brass handle. 17th century.
- 1043 to 1046. DRESS RAPIERS. Straight, double-edged. 18th century.
- 1047, 1048. Straight single-edged military SWORDS. 18th century.
- 1049 to 1051. Indian SABRES. One armed with two points.
1052. European SABRE. Form derived from the East.
1053. Ancient Indian SWORD. Curved. Edge on concave side, and a small metal knob at point.
- 1054 to 1057. KHORA. The sword used by the Goorkahs of Nepal, north-east India, for decapitating animals and men.
- 1058, 1059. Albanian YATAGHANS. The edge on concave side. A survival of the ancient Greek *kopis*.

1060. Turkish SABRE. Modern.
- 1061 to 1064. Indian swords called *Ferrung*, with projecting points at the pomel. North India.
1065. Straight single-edged sword. Probably Malay.
- 1066, 1067. SWORD of the Ilanoon pirates. Malay archipelago. Single-edged, broad at the end.
1068. SWORD of Ilanoon pirates, with sheath, and a brass crotal and human hair attached to handle. Captured from the pirates by Sir Edward Belcher.
1069. SWORD, with broad end, single-edged. Probably Malay.
1070. SWORD, single-edged, pointed. Japan.
- 1071, 1072. SWORDS. The blades European, mounted in stamped leather sheaths, in the Mandingo country, West Africa.
- 1073, 1074. Straight double-edged SWORDS, with cross guards, mounted in stamped leather sheaths. Northern Africa.
1075. European SABRE.
- 1076, 1077. European HUNTING SWORDS, one with a saw edge.
1078. SWORD of peculiar form, blade and guard in one piece of iron, with a rein-cutter attached to point.
1079. Sacrificial KNIFE. Nepal. A mark for each victim has been punched on the blade.
- 1080, 1081. Burmese single-edged SWORDS.
- 1082 to 1086. Burmese DAH, with long handle, in the same curve as the blade. They are used as tools and weapons. Single-edged.
1087. Small Japanese SWORD of nearly the same form as the last.

SCREEN 38.

- 1088, 1089, Fig. 119. Leaf-shaped SPEAR-HEADS, hafted and used as knives. Gaboon, West Africa.
1090. DAGGER or KNIFE of the same shape as the last, but broader. Gaboon, West Africa.
- 1091, 1092. Short iron leaf-shaped SWORDS. Gaboon, West Africa. The blade, as well as the handle, resembles those of the bronze period.

- 1093, Fig. 120. SWORD of the same form as the last, with incised portions on the sides; resembling in this respect some of the bronze spear-heads from the lake of Neuchâtel, in Switzerland. Gaboon, West Africa.
- 1094, 1095. SWORD, leaf-shaped, but with a square point, called *Ba-banga*; made at Batta and used by the Fan negroes. Gaboon, West Africa.
1096. Leaf-shaped SWORD or GLAIVE, with a long handle, having a point at the butt-end. Gaboon, West Africa.
- 1097, 1098. SWORDS with triangular blades, broad at the end. Gaboon, West Africa.
1099. SWORD of the same form as the last, only broader, Gaboon, West Africa.
1100. SWORD of nearly the same form as the preceding specimens, but curved and single-edged, with a row of chevron marks punched on the blade. Dahomy, West Africa.
1101. SWORD, nearly similar to the preceding specimen, but rounded at the end, the blade of brass; used on state occasions. Dahomy, West Africa.
- 1102, 1103. SWORDS of nearly the same form as the preceding specimen, but narrower in the blade. Dahomy, West Africa.
1104. Small BILL or CHOPPER. Dahomy, West Africa.
- 1105, Fig. 121. Curved SWORD or BILL. Liberia, West Africa. This is the same shape as No. 1096, only curved.
1106. Curved SWORD or CHOPPER, the edge on the concave side, the blade ornamentally pierced. Old Calabar, West Africa. Obtained by Captain Irving.
1107. Curved SWORD, similar in form to the last, called *Ooda-cutty*. From Coorg, India.
1108. BELT, with steel hook for carrying the preceding specimen on the back; it is not carried in a sheath.
1109. Curved SWORD, the edge on concave side. Malabar, India.
1110. Leaf-shaped iron DAGGER, of rude workmanship, with ivory handle. West Africa.
- 1111 to 1113. Leaf-shaped iron DAGGERS. Meyrick includes these daggers amongst Malayan weapons; if so, they afford another link of connexion between African and Malayan forms.

1114. Nupi DAGGER, West Africa, with ogee blade.
1115. Small leaf-shaped DAGGER. West Africa.
1116. Small Ashantee DAGGER.
1117. DAGGER. Probably East Africa.
1118. Small DAGGER. Lukoja, Niger, West Africa.
- 1119, 1120. Small DAGGERS. Soudan.
1121. Bornouese DAGGER.
1122. Small DAGGER. West Africa.
- 1123 to 1125. Bornouese DAGGERS, the sheaths of stamped leather, with a leather collar to carry it on the left arm.
- 1126, 1127. JUMBAS. Banoko tribes, Malimba, West Africa.
1128. Mandingo DAGGER. West Africa.
1129. Ashantee DAGGER. West Africa.
1130. DAGGER, Liberia, with leather belt attached to sheath.
1131. KNIFE. Africa.
1132. Rudely - constructed DAGGER, probably Northern African, the handle of rhinoceros horn, with two large brass rings attached to sheath, one on each side.
1133. DAGGER, with brass ornamented blade, and two brass leaves screwed on on either side. Probably from some part of Africa.
1134. DAGGER. Africa.
1135. Moorish DAGGER.
1136. DAGGER or KNIFE. Africa. The handle inlaid with white metal, and the sheath of stamped leather.
1137. Modern DAGGER. Probably Egyptian. The handle of brass, terminating in the representation of an animal's head.
- 1138, 1139. Small Kabyle KNIVES of the form of the *Flissa*. North Africa.
1140. Kabyle sabre-shaped KNIFE. West Africa.
1141. Curved DAGGER, with handle of rhinoceros horn. Abyssinia.
1142. Moorish curved DAGGER. North Africa.
1143. Iron KNIFE, with strike-a-light attached to handle. Possibly a North American Indian scalping knife.

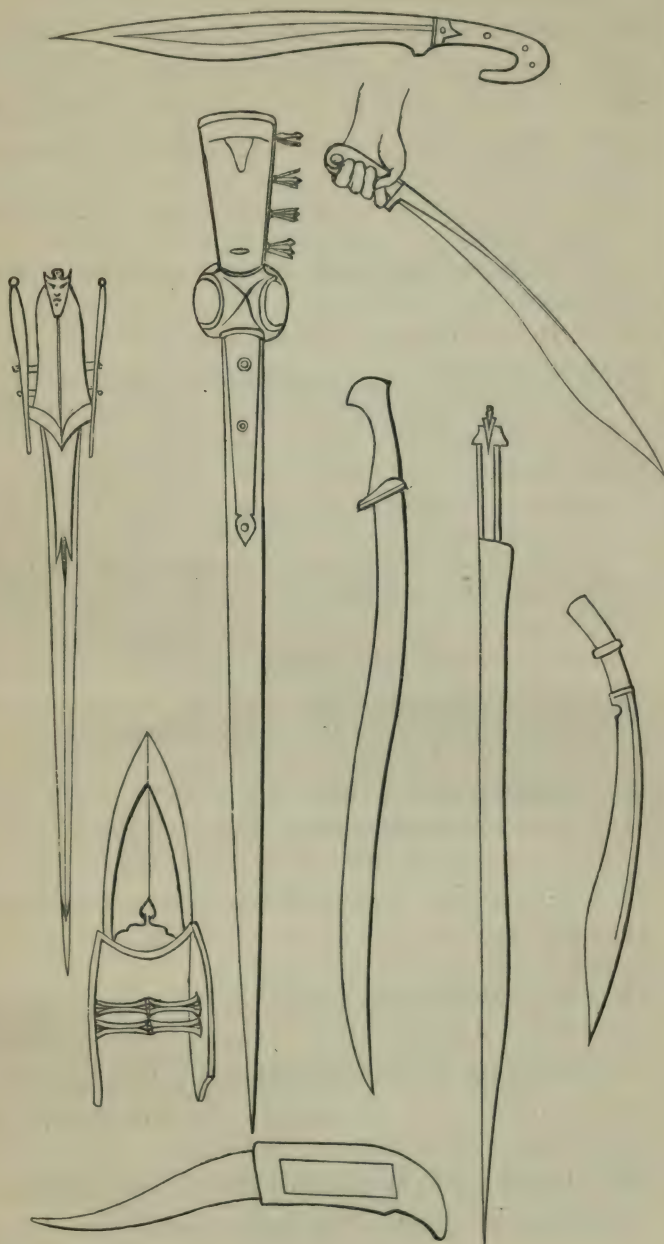
1144. Indian KNIFE, with triangular blade and brass handle; arrow-shaped.
1145. DAGGER, with ivory carved handle. Oriental.
1146. Leaf-shaped DAGGER on spear-head. Burmah.
1147. KOOKRIE, the knife of the Goorkahs. Nepaul, India.
1148. Burmese single-edged curved KNIFE, with the edge on the concave side.
1149. Indian KNIFE, of the same shape as the last, with curved handle.
1150. KOOKRIE, the knife of the Goorkahs. Nepaul, India.
1151. Turkish DAGGER in silver sheath.
1152. Indian SWORD of peculiar construction, said to be a weapon of treachery, to be concealed under the clothes. Obtained by Colonel North, 60th Rifles.
1153. WAG-NUK or Tiger's claw. This was an Indian weapon of treachery belonging to a secret society, and was invented about the year 1659; the claws stick out between the fingers when the weapon is grasped in the hand, and were poisoned.
1154. Japanese DAGGER of the same construction as the Japanese swords, only smaller.
1155. Double DAGGER. The handle of one dagger is the sheath of the other, so that when sheathed side by side it appears like a single stick. Burmah.
1156. Burmese short SWORD.
1157. KNIFE of the Soolikuttie Mishmees, Assam. Curved blade, the wooden sheath on one side only.
1158. KNIFE of the Digaroo Mishmees, Assam.
- 1159, Fig. 122. SWORD. Assam. The sheath on one side only.
- 1160, Fig. 123. BAN of the Lepchas near Darjeeling, between Nepal and Bootan. Obtained by Dr. A. Campbell.
1161. European double-edged DAGGER. 16th century.
1162. DAGGER with three-edged bayonet-shaped blade. European. 16th century.
1163. DAGGER with three-edged blade. 16th century.
1164. Hunting KNIFE. The blade pierced in holes to let the air into the wound, single-edged. European.

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131



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135
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PLATE XIV.



1165. Albanian single-edged KNIFE. The blade is inlaid with the figures of animals in brass.
1166. Scotch DIRK. Commencement of 16th century. The handle carved in interlaced bands.
1167. English POIGNARD. 14th century. Found in the Thames.
1168. DAGGER. Period uncertain. Much corroded. The handle ornamented in a spiral twist. Possibly of the 16th century.
1169. Florentine POIGNARD. Middle of the 16th century.
1170. DAGGER found in excavation in the streets of York.
- 1171 to 1183. Chinese SWORDS and DAGGERS. Some with two in one sheath.
1184. Chinese coins strung together in the form of a short SWORD. This is a mode of carrying money in use in that country.
1185. Two-handed short SWORD bound with green cloth. Locality not known.
- 1186 to 1194. Malay DAGGERS and KRISES.
1195. PARANG-LATOK. Malay. Used as a tool and weapon. Attached to the sheath are small splinters of bamboo, called Rangoes, used to stick into the ground as a kind of chevaux-de-frize.
1196. SICKLE with serrated edge. Africa.

SCREEN 39.

WEST WALL.

SERIES ILLUSTRATING THE DEVELOPMENT OF
THE KYJAR AND BICHWA.

- 1197, Fig. 124. KYJAR composed of cow's horn, the natural form of which gives the shape of the blade. Vizanagram, India.
- 1198, 1199, Fig. 125. KYJARS. The blade and handle of the preceding specimen imitated in ivory and steel. Vizanagram, India.
1200. KYJAR of nearly the same form as the last, the handle of metal faced with horn, the pomel expanded into a lunette form.
- 1201, Fig. 126. KYJAR. The handle is entirely of metal, the pomel further expanded into the form of two divergent branches. This form is produced by omitting the horn casing of the preceding specimen; it is sometimes called *Chellanum*.

1202. KYJAR. The handle entirely of metal, one of the divergent arms of the pomel in the specimen is omitted, and the other ornamented with the representation of some small animal and a bird, probably representing some mythological subject.
1203. BICHWA. Constructed entirely of horn, the shape of the blade as in the preceding series; an aperture is cut in the horn for the hand.
1204. BICHWA. The same form as the last, imitated in steel. Sattara or Gwalior.
1205. BICHWA. The same form as the two preceding specimens in steel. Sattara or Gwalior.
1206. BICHWA of the same form as the last with a two-pointed blade. Sattara or Gwalior.
- 1207, Fig. 127. BICHWA of the same form as the last with two-pointed blade, and a receptacle for poison in the handle. Sattara or Gwalior.
1208. DAGGER with a handle of the same form as the preceding series. From West Africa.

SCREEN 39.

WEST WALL.

SERIES ILLUSTRATING THE DEVELOPMENT OF THE KUTTAR WITH TRIANGULAR BLADE AND TRANSVERSE HANDLE INTO THE BARRA-JUMDADOO WITH MEDIUM-SIZED BLADE AND A RUDIMENTARY HAND-GUARD, AND ULTIMATELY INTO THE PUTTAH OR GAUNTLET SWORD WITH LONG RAPIER BLADE AND FULL GUARD FOR THE HAND AND FORE-ARM.

- 1209 to 1218, Fig. 128. KUTTARS. Showing a gradual elongation of the blade. From Odypore, Ulwar, Marajpore, Joudpore, or Vizianagram.
- 1219, 1220, Fig. 129. BARRA-JUMDADOO, with medium size blade and rudimentary hand-guard. From Vizianagram.
- 1221, Fig. 130. PUTTAH or gauntlet SWORD with long rapier blade and full guard for the hand and fore-arm. Said to be used by men of inferior rank and athletics. Lucknow.

SCREEN 39.
WEST WALL.

WAVE BLADES.

- 1222, 1223. Malay KRISES, with wave blades.
1224. Indian DAGGER with wave blade.
1225. European dress SWORD with wave blade.

SCREEN 39.
WEST WALL.

PLUG BAYONETS.

1226. PLUG BAYONET, time of Charles II. Middle of 17th century. Three-edged, like the daggers Nos. 1094 and 1095. This specimen is figured in pl. cxv., Fig. 6, Vol. II. of Meyrick's Ancient Armour.
1227. Spanish PLUG BAYONET. Doubled-edged, with cross-guard. On the blade is an inscription: "No me sacues sin rason. No me embaienes sin honor." "Do not draw me without reason. Do not return me without honour." It is figured in pl. cxv., Fig. 7, Vol. II. of Meyrick's Ancient Armour.
1228. PLUG BAYONET with the date 1647.
1229. PLUG BAYONET with a head in brass on the butt-end.
1230. PLUG BAYONET, the plug much corroded.
1231. A CUTTING BAYONET. The ring attached to the guard suggested the possibility of fixing the bayonet so that the muzzle should not be stopped up. The muzzle passed through the ring and the haft went into another on the musket stock, being held in its place by a catch with a notch in it. First used in the time of William III. This specimen is figured in pl. cxv., Fig. 12, Vol. II. of Meyrick's Ancient Armour.
1232. Modern socket BAYONET.

SCREEN 39.
WEST WALL.

SPECIMENS ILLUSTRATING THE GEOGRAPHICAL
DISTRIBUTION OF THE FORM OF BLADE
KNOWN AS THE GREEK KOPIS, AND ITS
SURVIVALS.

- 1233, Fig. 131. Greek KOPIS, found in a tomb between Madrid and Toledo, with others of the same form, and two DAGGERS, a SPEAR-HEAD, and part of the SHAFT of a Roman PILUM.

- 1234, Fig. 132. Copy of figures on a Greek VASE in the British Museum, representing a battle between the Gods and Giants. The latter armed with the KOPIS.
1235. Copy of figures on a VASE in the British Museum, representing a battle between Hercules and the Amazons, the latter armed with the KOPIS.
1236. Amazons using the KOPIS. From a vase in the Museum at Naples.
1237. Greek warrior, using the KOPIS. From a vase in the Museum at Naples.
- 1238, Fig. 133. KOOKRIE, the weapon of the Goorkahs of Nepal, used at the present time. Its form is the same as that of the Greek Kopis.
1239. SWORD BLADE of the form of the Kopis. India. With European handle.
1240. Small Indian KNIFE, with a somewhat similar form of blade to the last.
1241. Turkish YATAGHAN. The form is that of a modified Kopis blade.
1242. Albanian YATAGHAN. The form is that of a modified Kopis blade.
- 1243, Fig. 134. Persian YATAGHAN. The form is that of a modified Kopis blade.
- 1244, Fig. 135. FLISSA, used by the Kabyles in North Africa. The form is that of a Kopis blade, straightened, like those represented in the hands of the Greek warrior on the vase in the Museum at Naples.
1245. Abyssinian SHOTEL. It is used to strike with the point downwards.
1246. Small KNIFE, used in the sheath of the Goorkah Kookrie, and of similar form.
1247. Small KNIFE, the same as in No. 1246.

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